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OF

Arts and Sciences;

CONTAINING

REPORTS OF ALL NEW PATENTS,

WITH

DESCRIPTIONS OF THEIR RESPECTIVE PRINCIPLES AND PROPERTIES;

ALSO

Original Communications

ON OBJECTS CONNECTED WITH

SCIENCE AND PHILOSOPHY;

PARTICULARLY SUCH AS EMBRACE THE MOST RECENT

INVENTIONS AND DISCOVERIES

IN

PRACTICAL MECHANICS.

BY W. NEWTON:

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No. LXII.

Recent Patents.

To WILLIAM HENRY JAMES, *of Cobourg Place, Winson Green, near Birmingham, Engineer, for his Invention of certain Improvements in Apparatus for Diving under Water, and which Apparatus, or part of which Apparatus is also applicable to other purposes.*

[Sealed 31th May, 1825.]

THE object of this invention is to enable persons to remain under water for a considerable space of time, in order to examine the bottom of the sea, to break up wrecks or sunken vessels, for the purpose of recovering property, and attaching such fastenings to packages as shall allow of their being drawn up into ships or boats floating above. The most expert divers can remain under water but a very short space of time, scarcely a minute, which is insufficient for the purposes of attaching grappling irons or other fastenings to the articles required

to be raised. Hence for the recovery of sunken property diving bells are commonly used, in the employment of which the volume of air contained within the bell keeps the surrounding water from entering, and the persons who are enclosed within the bell have the opportunity of moving about freely, the fresh air for their respiration being occasionally supplied through pipes by a force-pump. But within these diving bells the range of operation is necessarily limited, and the bell has to be shifted from place to place with considerable difficulty, labour, and loss of time.

The design of the present invention is to obviate these inconveniences, and to permit the diver to move about freely in any direction under the water, without limiting his range, and to afford him the means of supplying himself with air for respiration whenever that should be necessary.

The apparatus in question consists of a hood to be placed over the shoulders, and which is made fast round the body and arms by means of elastic bandages; and also a vessel to contain condensed atmospheric air, from which vessel a pipe leads to the interior of the hood, and a cock in the pipe allows a small current of air to flow, or small portions of the air to be transferred from the vessel as the wearer may require it, while under water.

Plate I. fig. 1, represents the diver attired in the apparatus; fig. 2, is a section of the hood and air vessel taken sideways; *a* is the metallic air vessel, made particularly strong by means of ribs or partitions, in order to resist the internal pressure of the condensed air when filled, which is to be pressed into the vessel by means of an ordinary condensing air pump; *b*, is a small valve opening inwardly, to which a tube from the pump, or from a reservoir of condensed air, is attached, and through this

valve the air is to be forced into the vessel, *a*, until it has acquired a sufficient degree of density. The requisite density of the air in the vessel, will depend upon the depth of that part of the sea where it is to be employed, and the time the diver is intended to remain under water; thirty atmospheres will in general answer the purpose, and be found sufficient for about an hour's consumption; *c*, is a tube to be made of caoutchouc or some such elastic material, through which the air is to be delivered into the water-tight hood, by the opening of the stop cock, *b*, which is under the controul of the wearer, and may be made to discharge a greater or less current of air by turning the screw.

The helmet or hood is to be made of thin copper or of sole leather varnished, or of any other material that can be rendered water-tight, and is sufficiently stiff to resist the external pressure. In the front of the hood a plate of strong glass, or two eye-pieces are to be inserted, for the purpose of enabling the wearer to view the surrounding objects under water. Within the hood is a tube, *e*, with a flexible end near the mouth, and a spring valve opening outwards, by which the wearer discharges the air from his lungs.

At the lower part of the helmet or hood, round the breast, the back, and the shoulders, a garment is attached made of water-proof material, which is to be fastened round the body of the wearer above the hips, and round the arms by elastic bandages. In the breast or any other convenient part of the helmet a safety valve is inserted, for the purpose of letting off a portion of the air admitted in case its internal pressure should be too great.

The apparatus so constructed is to be attached to the diver as shewn at fig. 1, in the following manner: first, let

the helmet with the dress be put over his head and shoulders, and then let it be made fast round his body and arms, by means of the elastic bandages; next, let the ring-formed vessel, *a*, be brought upwards and suspended by straps, passing over the shoulders; then connect the elastic tube, *c*, to the helmet, by a union joint, when the diver will be equipped ready for descending into the water.

Round the bottom part of the air vessel, weights or bags of shot are to be attached, for the purpose of overcoming the buoyancy of the diver and his apparatus, and enabling him to move about and keep on his feet at the bottom of the water.

If a diving bell is employed in conjunction with this apparatus, the diver may go out from the bell, and return as occasion shall require, for the purpose of depositing small articles, and he may carry in the bell one or two extra vessels filled with condensed air, to be exchanged when necessary for the vessel he has worn, and breathed the air from. Instead of forcing the air into these vessels by means of a pump, a reservoir of condensed air may be prepared, and the requisite supplies transferred to the vessels as they are wanted.

This apparatus without the weights may be very advantageously employed in descending mines or other places filled with deleterious gases, the supply of air for respiration being received from the condensed air-vessel, and that exhaled driven out through the discharge pipe.

[*Inrolled November,* 1825.]

To SAMUEL LORD, JAMES ROBINSON, *and* JOHN FORSTER, *all of Leeds, in the County of York, Co-partners, Merchants, and Manufacturers, for their Invention of Certain Improvements in Machinery for, and in the Process of Raising the Pile on Woollen Cloths and other Fabrics, and also in Pressing the same.*

[Sealed 11th August, 1825.]

THESE improvements consist first, in the construction and employment of a peculiar kind of gig mill, containing two cylinders or gig barrels, intended to revolve in opposite directions, which are so contrived, that one cylinder shall be in operation, raising the pile of the cloth in one direction, while the other cylinder remains stationary, and affords time for changing the teasle rods, that is, removing the spent teasles and replacing fresh ones. By this contrivance, the ends of the piece of cloth which have been sewn together to form an endless web, for the purpose of passing over the gig cylinder in one direction, do not require to be cut and resewn as in other gigs, when the direction of raising the pile is to be changed, for in this improved gig it is only necessary to shift two rollers, which will enable the cloth to be removed from one cylinder, and to be immediately brought in contact with the other cylinder, and there to be raised in a contrary direction. The improvements in pressing woollen cloths and other fabrics, which form the second head of the invention, consist in the construction and employment of hollow plates, and in heating the said plates by steam after they are placed in the

press; also of cooling the plates with water when the desired heat and pressure have been given to the goods; which contrivances admit of regulating the temperature of the plates suitable to circumstances, and to the different kinds or qualities of goods to be pressed.

Plate I. fig. 3, is a side elevation of the improved gig; *a* and *b*, are the two cylinders, supported in iron bearings, on the peripheries of which the rods or frames are placed that hold the teasles as usual. These cylinders are made to revolve by means of clutches that slide upon their axles, and lock them to large toothed wheels, not shewn in the figure, being at the back part of the machine. These wheels take into each other, and are actuated by any suitable gear connected to a steam-engine, or other first mover. When the axle of the cylinder, *a*, is locked to the wheel behind by its clutch, the cylinder necessarily revolves with it, while the clutch upon the axle of the cylinder, *b*, being withdrawn from its wheel, that cylinder remaining stationary.

The cloth is shewn in an endless web, *c*, *c*, *c*, passing over a series of rollers, *d*, *d*, *d*, as guides or conductors; the roller, *e*, being for the purpose of giving tension to the cloth, and pressing it against the periphery of the gig cylinder. This pressure and the extent of action of the gig against the cloth, may be increased or diminished by lowering or raising the rack, *f*, which support the roller, *e*, and is moved by a pinion, *g*. The pinions, *h*, *h* slide loosely upon the axles of the gig cylinders, but turn with them when locked by their clutches, *i*, *i*; these pinions and the toothed wheels, *k*, *k*, and *l*, take into each other and revolve together, the use of which is to give rotatory motion to the roller, *m*, (shewn by dots.) On the top of the roller, *m*, is the roller, *n*, which is turned by friction; these two rollers draw the cloth over

the gig cylinder, and also drive the bands which actuate the guide rollers, *d*, *d*, *d*, above.

It will be now perceived that when the gig cylinder, *a*, is in action, the cloth will be drawn from the right hand scray, passed under the tension roller, *e*, over the gig cylinder, *a*, between the drawing rollers, *n* and *m*, and from whence and will proceed up to the conducting rollers; and after passing along the top, will fall down into the same scray again, and so continue an endless rotation in one direction.

The cloth having been sufficiently operated upon in this direction, is now to be withdrawn from the gig cylinder, *a*, and brought into contact with the cylinder, *b*, by removing the tension roller, *e*, and placing a similar roller at *o*, in the bearing at top of the rack, *p*, which being drawn down with the cloth under it, holds the cloth against the periphery of the cylinder, *b*, in the same way as described when in connection with the cylinder, *a*. The clutches being now shifted, the cylinder, *b*, is put in motion, and the pile raised in a contrary direction to the foregoing, the cloth now being drawn from the left scray.

The patentees consider that a more particular description of the construction and action of this gig mill is unnecessary, as gig mills are well known in woollen manufactories, and their claim of invention extends no farther than to the mounting of two ordinary gig cylinders, in the manner above described, and exhibited in the figure, with the appendages for throwing the gig cylinders in and out of gear, and the necessary rollers for guiding and shifting the cloth from one cylinder to the other, in order that the endless web of cloth may have its pile raised in both directions, without the trouble

of cutting the stitches by which it has been tacked together, and resewing its ends.

The improvements as respect pressing woollen cloths and other articles, consist in the employment of hollow plates, heated by steam, and afterwards cooled by water. These hollow plates may be variously constructed, and the steam and water conducted into them in several ways, a method which is considered to be convenient, and well adapted to the purpose, is shewn at figs. 4 and 5. Fig. 5 represents one of these hollow plates, the top part being removed to shew the interior. It is made by two plates of iron, about an eighth of an inch thick, which are to form the upper and under surfaces; the edges are produced by a rim of iron, about one third of an inch broad, and three-quarters deep; within this rim the cross ribs to support the top and bottom plates are placed; these are united together by being notched into each other, and there are parts of the ribs between the junctions cut away, to allow the steam and water to flow over the interior surface of the hollow plate or box, the whole being covered by the top plate, and the joints made steam tight. On the side of the box or plate in any convenient place, a small tube, *a*, is introduced, through which the steam is to be conducted to the interior of the box, and in another convenient part also in the side of the box or plate, the tube, *b*, is to be inserted with its stop-cock, through which the steam or water is to be discharged.

Fig. 4, represents an ordinary press, in which woollen goods and other articles are usually pressed between heated iron plates; in this press the improved hollow plates are introduced, as at *c*, *c*, *c*, and also the mode of communicating the steam thereto is shewn; *d*, *d*, is a

pipe leading from a steam boiler at any convenient distance, and *e*, is a cold water pipe leading from a reservoir above; at the junction of these pipes there is a three way cock, by whic. either steam or water may be turned into the lower part of the pipe, *d*. On the side of the pipe, *d*, there are a series of jointed tubes, *f*, *f*, *f*, which are to be united to the small tubes, *a*, *a*, on the side of the hollow plates, by means of cylindrical pieces screwing or sliding over the ends of the two tubes, which contrivance is commonly called a union joint. In this way the steam from the main pipe is to be admitted into the hollow plates; and as the plates descend by the closing of the press, the joints allow the tubes, *f*, *f*, to elongate.

Before the steam is admitted, the cocks of the tubes, *b*, *b*, are to be opened, in order to allow the steam to blow through and discharge any water that may have condensed within. These cocks being closed, the plates become heated by the steam, and the degree of temperature may be known by placing a thermometer upon a small projection, made on the front of several of the plates for that purpose.

When a sufficient heat has been given to the goods pressed, and it becomes desirable to cool them speedily, the steam is to be turned off by means of the three way cock, and cold water admitted into the lower part of the pipe, *d*, which flowing through the jointed tubes, *f* and *a*, fills all the plates or boxes, *c*, and runs off at the cock, *b*, which in a few minutes render the plates perfectly cold.

As it is desirable to prevent the water from flowing on to the goods, there is a tin vessel, *g*, placed on the side, having apertures with lips on the edge, into which the ends of the tubes, *b*, are to be introduced; this vessel

may communicate with a drain, or it may be sufficiently capacious at bottom to hold the water discharged.

In conclusion, the patentees state, that they do not confine themselves to the particular construction of apparatus here set forth, as the principle will admit of extensive variation, but that they rest their claim of invention in the employment of hollow boxes or plates, heated by steam, and cooled by water, for the pressing of woollen cloths, and other articles as aforesaid. And they consider that this apparatus and process, beside producing the desired object with greater expedition and better effect than usual, admits of regulating the heat to any required temperature, and with uniformity throughout the whole series of plates, which cannot be done by the ordinary mode of heating the plates in an oven; and besides this, the expence of erecting and heating an oven is saved, as a very small boiler placed in any convenient part of the premises will answer the purpose.

[*Inrolled October*, 1825.]

To ISAAC RIVIERE, *of Oxford-street, in the Parish of St George, Hanover-square, in the County of Middlesex, Gun Maker, for his Invention of an Improved Construction, Arrangement, and Simplification of the Machinery by which Guns, Pistols, and other Fire Arms are discharged.*

[Sealed, 20th May, 1825.]

THE improvement which constitutes the subject of this patent, consists in dispensing with certain parts of the

ordinary gun lock, and substituting other parts for similar purposes, as well as arranging the mechanism in a different way to that of any machine or lock heretofore made for the discharge of fire-arms.

Plate II. fig. 1, is a section of a gun or fowling-piece, cut lengthwise through the stock and the barrel. This gun is intended to be discharged by means of percussion, but the improved construction of the lock will apply also to flint gun-locks; *a*, is the barrel with what is called a patent breach; *b*, the nipple, through which the fire from the percussion passes to the charge; *c c*, is the false breech through which an aperture is made for the cock, *d*, to work in. The cock, *d*, and the tumbler, *e*, are in one piece; *f* is the main spring attached to the under side of the false breech, and connected to the tumbler by a swivel. The force of this spring acts upwards, and causes the cock when released from the seat to fall upon the nipple with great force. The sear and trigger, *g*, are in one piece; *h*, is the sear-spring, which keeps the sear and trigger up to their proper bearing.

This improved lock, though shewn only as applied to a single-barrelled gun, may be adapted also to a double-barrelled gun, in which all the parts will require to be separate. The patentee says, "though I have described the entire construction of a gun-lock, and the form of all its pieces, yet I wish it to be understood that I do not claim all those parts as new, having used some of them before; but I claim as new the form of the piece constituting the sear and trigger. I also claim as new the attachment of the main-spring to the false breech; and lastly, I claim the new arrangement of the parts constituting a lock or machine for the discharge of fire-arms, upon a more simple construction than any other gun-lock hitherto employed for that purpose."

Inrolled, November, 1825.

To the REV. JOHN SOMERVILLE, A.M. *Minister of the Parish of Currie, in the County of Edinburgh, for having invented, devised, and discovered a Method or Methods applicable to Fowling-Pieces, or other Fire-Arms, by which Method or Methods all accidental discharge of the said Fowling-Pieces or other Fire-Arms will be completely prevented.*

[Sealed 4th November, 1824.]

THERE are several modes proposed in this specification of preventing the accidental discharge of fire-arms, all of which consist in the adaptation of a bolt or stop in different ways to the lock of the gun, for the purpose of confining either the main spring or the trigger, which bolt or stop is to be released by the left hand of the sportsman, when the piece is presented from shoulder.

In Plate II. fig. 2, is a perspective view of part of a gun, with a lever, *a*, extending along the side of the stock. One extremity of this lever passes through a hole in the lock plate, and arrests the main spring so as to prevent it from acting until pressed upon at the other extremity by the left hand, when the main spring being released, allows the piece to be discharged, by pulling the trigger as usual. If this contrivance is adapted to double barreled guns, there is to be a lever of the same kind applied to the lock on each side.

Another mode of effecting the same object is shewn at fig. 3, where a sliding bolt, *a*, passes under the trigger plate, and, by locking into a notch at *b*, on the front side of the trigger, renders the trigger immoveable, until the left hand of the sportsman, on bringing the piece to the shoulder, draws back the sliding bolt which confined

the trigger, and thereby allows the piece to be discharged.

A third method of locking, very much like the last, is by making the sliding bolt move a staple, *c*, which locks into a notch in the back part of the trigger. A fourth is by means of a peg upon the swivel, under the end of the main spring, which prevented the swivel from moving until by the shifting of the slider, a hole, *d*, is opened in the guard plate for the peg to pass through. The fifth contrivance is a staple locking behind the trigger, which is released by pressing with the fingers of the left hand against a knob or button, *a*, that passes through a hole in the guard, which moves a curved lever lying within the guard, and thereby unlocks the trigger. The sixth plan is nearly the same, excepting that the curved lever is on the outside of the guard.

There are several other modifications of the same contrivances, and the patentee sums up the whole by saying, that he "begs distinctly to state, that he lays no claim to the principle of locking guns by detants, stops, or catches worked solely by the left hand, as this has been in use for some time past, but he claims as his particular invention the principle of locking and unlocking guns, or preventing their accidental discharge by the left hand, so that both hands are absolutely necessary to work the gun in the field."

[*Inrolled January*, 1825.]

To John Crosley, *of Cottage Lane, City Road, in the County of Middlesex, Gentleman, for his invention of*

a contrivance for better insuring the egress of Smoke and rarefied Air in certain situations.

[Sealed 4th November, 1824]

THE leading object of this invention appears to be the construction of a chimney-pot, that shall freely discharge its smoke under all states of the wind and weather. The top of the chimney-pot is covered by a cap, and the exit passages are in the sides, through contorted channels, formed by shields, for the purpose of breaking the force of the wind.

In Plate I. fig. 6, is an external view of the chimney-pot; and fig. 7, is a section of the same, shewing the forms of the passages through which the smoke passes. The caps or shields are supported by rods, leaving the parts between open, for the free discharge of the smoke; their forms being such as will effectually guard the wind from entering in whatever direction it blows.

[*Inrolled May*, 1825.]

To JOHN CHARLES CHRISTOPHER RADDATZ, *of Salisbury Square, Fleet-street, in the City of London, Merchant, in consequence of a Communication made to him by Ernst Alban, of Rostock, in the Grand Duchy of Mecklenburgh Schwerin, Doctor of Medicine, for his Invention of Certain Improvements on or connected with Steam Engines.*

[Sealed 14th May, 1825.]

THESE improvements consist in a peculiar mode of generating steam, which is to be effected by immersing a

series of tubes in melting metal, and injecting water into those tubes, where the heat of the melted metal surrounding the tubes will immediately convert the water into steam.

Plate I. fig. 8, represents the section of a furnace, with a boiler, or generator of steam constructed upon the principles herein proposed. *a*, is the fire-place, supplied with fuel at the opening, *b*, in front, and with air to promote the draft through a lateral aperture, *c*, below the grate; *d*, *d*, are the flues leading to the chimney, and *e*, *e*, *e*, *e*, is a vessel nearly filled with melted metal, into which a series of tubes, *f*, *f*, *f*, are immersed. These tubes are inserted through circular holes into the top plate of the vessel, *e*, their upper ends being open, and their lower ends closed. Across the mouths of all these tnbes, a pipe, *g*, extends, which receives water from a forcing pump, and delivers it in jets through small holes into the respective tubes, *f*.

The metal which occupies the interior of the vessel, *e*, is proposed to be a mixture of tin and lead, or any other easily fusible compound, which is retained in a fluid state by the heat of the furnace and flues surrounding it, and this communicating its heat to the tubes, causes the water injected into those tubes to be instantly converted into steam, which steam rises into the chamber, *h*, *h*, and passes off through the pipe, *i*, to the steam engine, there being a safety valve, *k*, in this pipe properly weighted to prevent explosion.

Two or more of these vessels, *e*, may be placed side by side in one furnace, each containing a series of tubes similar to *f*, which are to receive jets of water, and to discharge their steam into the chamber, *h*, in the manner above shewn. A wall, *l*, represented by dots is to be built across the flues of the furnace, for the purpose of

directing the flames upward, and bringing them to act upon the upper part of the fluid metal, in order to keep it of a uniform heat throughout: the means of regulating the temperature being a thermometrical balance, which raises or lowers a shutter that opens or closes the mouth of the aperture, *c*, by which air is supplied to the furnace.

This regulator consists of a box, *m*, nearly filled with mercury, into which a pipe, *n*, leading from the melted metal vessel, conducts heated air; and the mercury in the box, *m*, expanding according to the temperature of the air so acting upon it, rises up into the tube, *o*, where a float is placed connected to the vibrating beam, *p*, Hence, according to the heat of the melted metal, so will be the height of the mercury in the tube, *o*, and the float rising or falling with the mercury will cause the beam, *p*, to rise and fall also; and the rod, *q*, which moves the shutter of the air passage, *c*, being attached to the reverse end of the vibrating beam, when the temperature increases will close the air passage, and when it decreases will open it, causing the fire to burn with greater or less intensity according as the heat of the metal requires to be increased or diminished.

This mode of generating steam will admit of considerable variation in the forms and dispositions of the parts of the apparatus from those shewn in the figure; it is therefore to be understood that the patentee does not claim this particular apparatus as his invention, but embraces under his patent right every mode of generating steam by injecting water into vessels that are heated by immersion, in fused or fluid metal; and also in the thermometrical regulator and its appendages, by which the intensity of the fire is increased or decreased according to the temperature of the fluid metal employed.

[*Inrolled, November*, 1825.]

To Isaac Taylor, *jun. of Chipping Ongar, in the County of Essex, Gentleman, for his new invented Cock or Tap for drawing off Liquids.*

[Sealed 20th November, 1823.]

This new-invented cock or tap, for drawing off liquids, is made to discharge the fluid by sliding a tube, instead of turning the key, as in the ordinary construction of cocks. The principle upon which these improved cocks are made, will admit of very considerable variation in their forms; that shewn in section in Plate II. at fig. 4, is deemed to be eligible; *a*, is the socket to be fixed into the barrel, which is open at the hinder part or perforated with holes; *b*, *b*, is the discharge part affixed to the socket by screwing in or otherwise; *c*, is a hollow tube sliding within the discharge part of the cock *b*, *b*, having perforations round it to allow the liquid to pass into the tube, but closed at its hinder end.

This tube is slidden along by means of the knob or handle *d*, and when pushed back into the socket *a*, the liquid from the barrel is enabled to flow through the apertures and along the tube, and to discharge itself at the mouth of the cock as usual; but when the tube is slidden forward into the position shewn in the figure, then the liquid is prevented from passing through the perforation into the tube, and the discharge is stopped.

A variation in the mode of moving the sliding tube is shewn in fig 5, where a rack, *e*, is placed on the upper side of the sliding tube, *c*, and a toothed sector, taking into the rack, is mounted in a small semi-circular box above. The sector being moved by a lever, *g*, the rack

and the tube will be made to slide backward or forward, and the liquor-way of the cock open or shut accordingly, as above described.

The patentee does not confine himself to any particular kind of metal or other material of which these improved cocks shall be constructed, his claim of invention consisting in the introduction of the sliding tube *c*, by which the liquor-way is opened or closed, instead of the revolving key heretofore employed in cocks for the discharge of liquids from casks, &c.

[*Inrolled, January,* 1825.

To WILLIAM RHODES, *of Hoxton, in the Parish of Hackney, in the County of Middlesex, Brick-maker, for his new invented improvement in the construction of Clamps for Burning of Bricks.*

[Sealed 20th November, 1824.]

THIS invention is an improved mode of placing bricks in the clamp to be burnt, in order that they may turn out of a more uniform quality than by the ordinary mode of burning. To render the improvement evident, the patentee has described the present practice, and pointed out what he considers to be its defects. He states that after forming the clamp by piling the bricks, and filling the interstices with brees or other fuel, the top is usually covered in with several courses of inferior bricks previously burnt, in order to prevent rain from insinuating itself into the clamp, which would soften and destroy the unburnt bricks within. Notwithstanding this precaution

however, the upper courses of new bricks generally come out of the clamp in a spungy, or what is technically called a shuffy state. This he attributes not to the soaking of rain through the covering, but to the rising of steam within, from the drying of the lower courses, which steam being prevented by the burnt bricks above, from passing freely into the amosphere, settles in the upper courses, and produces those spungy articles called shuffy bricks.

In order to prevent this, and enable all the bricks in the clamp to be dried and burnt uniformly, the patentee proposes, as his invention, to form lateral channels through the clamp, by which the steam may be enabled to escape without obstruction. These channels are to be particularly attended to in the upper parts of the clamp, and are to be there made by placing some of the bricks diagonally, and others crosswise, so as to produce pigeon holes and tunnels. When these precautionary measures are adopted, a less thickness of burnt bricks for the top coating is requisite, and the clamp may be covered with rubbish, which will effectually exclude rain. Thus the bricks will not be subject to turn out shuffy, and great saving will be thereby produced to the brick-maker.

[*Inrolled, May,* 1825.]

To JOHN MOORE, *of Broad Weir, in the City of Bristol, Gentleman, for his invention and discovery of a certain addition or additions to, or an improvement or improvements upon, the Steam Engine, or Steam Engine Apparatus.*

[Sealed 6th November, 1824.]

THIS invention is a peculiar kind of steam boiler, con-

structed by placing a series of tubes in erect positions, in a circular form, with the fire in the middle. A boiler of the kind proposed by the patentee, is shewn in section in Plate, II, at fig. 6. Within an enclosure of masonry or brick work, a series of hollow tubes, *a, a, a,* are erected; the upper ends of which open into a circular box, *b, b,* and their lower ends into a similar box, *c, c.* This lower box, *c,* is to be supplied with water from the reservoir, *d, d,* through the pipes, *e, e,* which water also rises in the tubes, *a, a,* and fire being placed upon the grate bars the water in the tubes will be made to boil.

The steam generated from the boiling of the water rises up the tubes, *a,* into the circular box, *b,* and passes off through the lateral pipe, *g,* to work a steam engine, or for whatever other purpose it may be required; and the water, which may happen to be thrown up out of the tubes by ebullition with the steam, runs down the descending pipes, *h, h,* into the reservoir, *d,* and from thence by the lower pipes, *e, e,* into the vessel, *b,* as before said. The fire is to be supplied with fuel at top, and with air for the draft at bottom, and the smoke passes off into a chimney above.

This is the construction of a boiler proposed, which appears to possess no other novelty than that of placing the tubes in a circle, with a reservoir surrounding them. The patentee says, "I claim the arrangement of the tubes *a,* whether such tubes are placed in circles concentric or excentric with each other, and also the reservoir, *d,* for supplying the tubes with water."

[*Inrolled, May,* 1825.]

To WILLIAM PHILIP WEISE, *of Tooley-street, Southwark, in the County of Surrey, Manufacturer, for his Invention of certain Improvements in the Preparing and Making Waterproof Cloth, and other Materials for the Manufacturing of Hats, Bonnets, and Caps, and Wearing Apparel; and in Manufacturing the same therefrom.*

[Sealed 14th October, 1824.]

THIS invention appears to consist more particularly in the selection and combination of certain materials to manufacture a cloth or fabric of a peculiar kind, than in the means of rendering the same waterproof. The fabric to be produced is chiefly designed for covering of hats and bonnets, to imitate beaver, but a similar selection and combination of materials is also applicable to the manufacture of other articles, such as velvet or plush, which fabrics may in the making be rendered waterproof or not, at the will of the manufacturer, that process forming a distant feature of the invention.

This improved fabric is to consist of beaver, musk, wool, the wool of hares' backs, Spanish wool, flax, down of feathers, and carded silk, all or several of these combined in the following manner and proportions.

To make the fabric for the best quality of hats, take of beaver, musk wool, and wool of hare's back, five pounds of each; of flax, two pounds; down of feathers, one pound; and of carded silk, three quarters of a pound. For hats of an inferior quality, take the same quantity of beaver, with rabbit's wool, seal's wool, camel's hair, red wool, Spanish, and squirrel's, to which is to be

added, flax, mohair, and down, with the carded silk in the same proportions. Or five pounds of beaver, and three or four of wool to one pound of down of feathers, two of flax, and three quarters of a pound of carded silk.

These materials are (as the first operation) to be equally divided into a hundred and forty two parts of each, ready for carding; the intention of which is, that about an ounce and a half of the materials combined may be passing through the carding engine at one time. The ordinary process of carding, and the constructing of the carding engine being well understood, as employed in the preparation of cotton, wool, and other materials, it is only necessary to say that the beaver is to be first laid upon the feeding cloth, and upon this the other materials, which being progressively drawn into the carding engine, the fibres become distributed and separated in the same way as in the usual process of carding other materials. From the carding engine the sliver is received into cans, and then taken to the drawing frames and twisting machine, to be operated upon in the ordinary way, and afterwards spun in a mule into a thread of such fineness or number as may be required to produce the intended cloth.

If the fabric is to be rendered water proof, this is the part at which that process is to be introduced. The finest of the spun material having been wound upon a reel into hanks, is now to be soaked in a solution of shell lack, caoutchouc, or other resinous gums, dissolved in spirits of wine or other spirits; and after being squeezed, to express the moisture as much as possible, is to be dried in the air in suitable drying apartments, and is also now to be dyed of the required colour.

The threads prepared and spun from the materials

selected as above described, are now to be woven in a loom, having six, ten, or fourteen lambs and counter meshes, the fine waterproof threads being employed for the back or shoot, and the coarser threads spun from the same kind of material for the warp or face of the cloth. After being thus woven, that cloth which is intended to be rendered waterproof is to be ironed or passed under heated cylinders, for the purpose of making the gums flow into the fabric; and when stretched upon frames, the pile or nap of the cloth is to be raised by means of fine cards, teasles, or brushes, as is the usual practice in raising the pile of such cloths or other fabrics as are to exhibit a pile or nap on their faces.

The cloth is now fit to be employed for covering hats and bonnets, to represent beaver, which is done by attaching its back surface to the shells, frames, or cases that are to be made into hats or bonnets, the modes of doing which are well known in the hat-making trade.

If the above selection of materials be employed for the manufacture of velvet, or other kinds of fabric for wearing apparel, they are to be woven and otherwise finished in the same way as such articles are usually manufactured.

[*Inrolled, April,* 1825.]

To Walter Foreman, *Esq. of Bath, in the County of Somerset, Commander in our Royal Navy, for his invention of certain improvements in the construction of Steam Engines.*

[Sealed 1st October, 1824.]

These improvements apply to a rotatory steam engine

of the kind described in the specification of Moore's Patent (see Vol. III. page 169), in which a series of flaps are attached by hinge joints to a wheel within a circular box, and the force of steam being allowed to act against these flaps on one side, causes the wheel to be driven round.

The present invention consists in the particular form of the flap or valve, and of the chamber in which it acts. Plate II. fig. 7, is a representation of the interior of the circular chamber, shewing the rotatory wheel and the flaps or valves; fig. 8 is a cross section of the same, in which the form of the chamber and of the valves are represented. The operation of the engine is this: steam being admitted from a boiler through the aperture, *a*, occupies the interior of the chamber, *b*, from the stationary block or stop, *c*, to the acting valve, *d*, and by exerting its expansive force within this chamber against these two surfaces, *c*, and *d*, causes the valve to be driven forward, and with it the wheel, *k*, *k*. When the valve, *d*, has reached the situation of *e*, the valve, *i*, will have fallen upon its hinge joint by gravity into the situation of *d*, and thus in succession the valves will be brought into action, and the wheel, *k*, be driven round by the elastic force of the steam.

From the hinder part of the block, *c*, an arm extends carrying the friction roller, *l*, and as the wheel revolves, the valves striking against this friction roller become closed, and the steam before the valve having performed its duty passes off at the exit pipe, *m*.

Thus far the construction and operation of this rotatory steam engine is not claimed by the patentee as new, but his improvement "consists in the conical form given to the side plates of the casing, *n*, *n*, in which the steam wheel moves and also to the flaps or valves acting therein"

What are the peculiar advantages of this form of chamber, and of valve acting in it, does not appear; but we suppose it is intended to assist in some way the facilities of packing the edges of the valves to make them perfectly steam-tight, and thereby to render the operation of the engine more effective than such engines have heretofore been.

[*Inrolled, April,* 1825.]

To Francis Rickman, *of Great Pulteney-street, Golden Square, in the County of Middlesex, Carpenter, for his Invention of certain Improvements in the construction of Fire Escapes; part of which said Improvements are likewise applicable to other purposes.*

[Sealed 7th October, 1824.]

This invention is a sliding step ladder, to be attached to the ceiling of the upper story of a house, for the purpose of enabling persons to escape on to the roof, in case the lower part of the house should be on fire.

Plate II. fig. 9, is a section of the landing-place at the top of the stairs of the upper story of a house, and the ladder is shewn in a state ready for use; *a*, is a box consisting of the upper half of the flight of steps; and *b*, is the lower half of the steps which slides out of the box; *c*, *c*, is a cord or chain attached to the lower end of the box, which passes over pulleys to the bottom of the door, *d*, that opens the way to the gutter and to the roof. This ladder is affixed to the ceiling above the landing-

place by hinges, and is intended to slide together and shut up into the space, *e*, *f*.

When the ladder is slidden together and put up into the recess, the door, *d*, will fall into its case, *g*, and a spring bolt, *h*, passing through a socket, at *i*, will fasten the door; at the same time, a similar spring bolt, at *k*, will slide into a staple at *f*, and keep the box with the ladder secure in the recess. This is the situation in which the parts are to remain when the ladder is not in use.

In the event of the house being on fire, the persons wishing to escape to the roofs of the adjoining houses are to pull the cord or chain, *l*, which withdraws the bolt, *k*, from its staple at *f*, and allow the ladder to descend; at the same time the bolt, *i*, is also withdrawn from its socket, and the door, *d*, is opened by the chain, *c*, as shewn in the figure.

The same sort of contrivance, by which a ladder may be made to slide into a box and to fold up to the ceiling, is proposed as a convenient apparatus in place of fixed stairs in small apartments. This constitutes the "other purposes," to which the patentee considers parts of the said improvements to be "likewise applicable."

[*Inrolled, April,* 1825.]

To Samuel Roberts, *of Park Grange, near Sheffield, in the County of York, Silver Plater, for his Improvements in the Manufacture of Plated Goods of various descriptions.*

[Sealed 18th December, 1824.]

These improvements in the manufacture of plated

goods consist in a new manner of attaching silver edges to plated articles; and in order to render the improvements evident, the patentee describes the ordinary modes of edging plated goods with silver. He says, the practice is to cut or file the edge of the plated article into such indentations as the ornamental pattern of the rim may require, and then by means of soft solder to attach a small cord of silver round the outer edge; this however may be easily discovered upon inspection, and the fact of the article being plated will be immediately obvious.

It is proposed, as the matter of improvement, after cutting the edges of the plated article into its requisite indentations, to attach a rim of silver by means of hard solder, and afterwards to burnish down the joints. By these means the patentee is enabled to make plated goods with silver edges, which even a skilful workman would not be able to detect.

[*Inrolled, February,* 1825.]

To JOHN THOMAS HODGSON, *of William-street, in the Parish of Lambeth, in the County of Surrey, Veterinarian, for his Invention of certain Improvements in the Construction and Manufacture of Shoes, or Substitutes for Shoes for Horses and other cattle, and Method of applying the same to the Feet.*

[Sealed 7th October, 1824.]

THE object of the patentee appears to be that of fitting shoes to the feet of animals upon a more scientific principle than has heretofore been practised, viz. "to fit

the shoe geometrically to the foot, and to prevent lameness by not disturbing the natural figure of the hoof in its varieties."

To effect this object, the patentee recommends that the shoe or substitute for a shoe should be of an oval form, but broader in front, to conform with the bulging part of the hoof. He also recommends that "instead of the shoe being curved or turned upwards at the heel, opposite to where the hoof becomes cylindrical; that on the contrary it should be turned downwards and outwards, so as to leave the same space between it and the hoof opposite, as between the lowermost part of the crust where the hoof is cylindrical, and the ground before the action of the hoof has taken place."

The angle which the front of the hoof naturally makes with a perpendicular line is described, in order to show the impropriety of raising the hinder part of the foot, and not allowing it to come fairly to a bearing on the ground line. The shoe is proposed to be made thickest in front, flat on the upper side, for the greater part, then inclining downward away from the hoof, and concave on the under side with teeth or indentations. The particular form or construction of the shoe is not however claimed, as the patentee says he is aware that shoes have been made with the under side studded with teeth, and more or less of an oval shape, and of greater or less thickness, and inclining downwards or outwards at the heel; but he believes without regard to any rule of exact proportions. He claims, therefore, as his invention, "every application of the said rule to the shoeing of horses and other animals."

[*Inrolled, April,* 1825.]

To William Furnival, *of Anderton, in the County of Chester, Salt Manufacturer, for his Invention of certain Improvements in the Manufacture of Salt.*

[Sealed 4th December, 1825.]

This invention is a peculiar mode of erecting the pans or boilers for concentrating salt: in which there are contrivances for drawing off the salt, as it deposits itself at the bottom of the pans, and thereby preventing its burning; and also a mode of rendering the steam, which is evaporated from the boiling of the lower pans, available to the heating of other pans above.

Plate II. fig. 10, is the section of a furnace, with pans erected over for the boiling and concentrating of salt; *a, a, a, a,* are four fire-places set in the brick work; *b, b,* are two salt pans or boilers, with chambers, *c, c,* on the sides below the bottoms of the pans, to receive the salt as it becomes concentrated in the boilers. These pans are occupied with brine, which is made to boil, and as the water evaporates, the salt crystallizes and descends to the bottom of the boiler; *d, d,* are scrapes, which are drawn along the pans by their handles, for the purpose of collecting the salt as it becomes crystallized, and drawing it from the pans into the side chambers, *c.* These chambers are shut off from the action of the fire by the brickwork, and keep the salt in its concentrated state without the possibility of its becoming burnt in the vessels.

The steam, evaporated from the boilers, *b, b,* is intended to heat a second range of pans, as *g, g,* placed above, by allowing it to rise in the compartments, *e, e*; and passing thence through the openings into the upper

compartment, *f*, *f*, these come in contact with the bottoms of the second range of pans, and heats the brine so as to produce a concentration of the salt. The water from the condensed steam runs down the inclined planes, *h*, *h*, into the pipe, *i*, and is thence discharged below; and the steam passes up through the cylindrical aperture, *k*, to heat a third set of pans, which may be placed above. The aperture, *k*, is however in the figure shewn closed, with a cap, the building not being carried up beyond the second range of pans; in that case the steam is to be drawn from the upper compartment through trumpets, *l*, *l*, and the lateral apertures, *o*, *o*, into the ash pits, *p*, *p*, and the mouth of the ash pits being closed, the steam and air so brought under the grates, will pass into the fire and supply the requisite draft.

[*Inrolled, June*, 1825.]

Novel Inventions.

Perkins on the Employment of Steam.

Mr. Perkins has recently made some very satisfactory experiments with his steam gun, before His Grace the Duke of Wellington, and several other Noblemen and Gentlemen connected with the Ordnance, in which he has proved the power of high pressure steam in propel-

ling balls, when employed in connection with his apparatus, to be greater than the force of gunpowder.

The experiment of shooting musket balls was tried against plate iron targets of a quarter of an inch thick, which had been previously perforated by the greatest available effort of the force of gunpowder; the balls from the steam-gun were likewise found to penetrate this target. But as these experiments had not determined the extent of the forces of the two impelling agents, blocks of elm timber were now placed as targets, against which the utmost effort of gunpowder in projecting musket balls had been previously employed. Mr. Perkins's gun was made to project similar balls by steam, under a pressure equal to a hundred and ten atmospheres, and the result was, that the balls from the steam-gun perforated considerably farther into the block of wood than those impelled by the gunpowder. A shower of balls was thrown at the rate of nearly a thousand a minute; and we are informed, that Mr. P. would undertake to keep up the same force of the steam without intermission for twenty-four hours, or any unlimited time. The experiments which have been tried, are said to have proved, that one pound weight of coal is capable of generating a quantity of steam that shall be equal in force to five pounds of gunpowder.

In the course of Mr. P.'s experiments, we understand that he has discovered the cause of some of those destructive explosions of steam boilers, which have been hitherto inexplicable. He has found that steam may, under some circumstances, be very greatly raised in temperature, and at the same time diminish in elastic force; but that the elastic force may be communicated to it instantaneously.

If we understand Mr. P., it is that steam, occupying a

vessel where water is not present, may be so far rarefied by an increase of temperature, as to place its individual particles of matter beyond the sphere of attraction, within which elasticity or mechanical force exerts itself; and that by a sudden ingress of water, matter may be instantly communicated to the rarefied vapour, which shall give it mechanical force. Should this be the fact, a boiler, in which the water has entirely evaporated, may become red hot, and rarify the small portion of steam remaining, without giving to that steam any great mechanical force, but on the sudden admission of a jet of water into the boiler, the steam will instantly take it up, and become of such exceedingly high pressure, as to rend the vessel asunder.

These are views of the subject of steam, which appear to have some novelty, though very crude and imperfect notions of the same kind have been before hinted, but certainly not sufficiently understood to be reducible into any thing like a system. We wait with considerable anxiety for a perfect detail of the facts connected with this subject, convinced that if any thing conclusive can be made out, it is a most important matter to be known, and the sooner the better.

New Metal in Imitation of Gold, called Mosaic Gold.

A new discovery has recently been made by Messrs. PARKER and HAMILTON, in mixing a certain alloy of metals, which exactly resembles fine gold. The base of the metal is supposed to be copper, and a constituent part of the alloy zinc; but the composition and its pro-

portions are for the present kept secret. Messrs. P. & H. have obtained a patent for their discovery, but the specification will not be inrolled until next May. The colour of the metal is extremely beautiful, and uniform throughout the mass; its specific gravity is considerably less than gold, but something more than copper; the cost price of it about the same as brass, and it is susceptible of being cast, chased, carved, and burnished.

The specimens we have seen were wrought into fruit foliage and scroll work, which exactly resembled fine gold, with a matted and burnished surface. It is said that this metal will not be subject to oxydation in the open air, and that it has resisted some of the acids; may be easily repolished, but will not retain its character if re-melted, without being treated in a peculiar manner. These are all the particulars we have yet been able to collect, but as the subject is likely to become of considerable importance, and to engross much of the public attention, we subjoin the account given by the patentees themselves,

"In introducing the above invention to public notice, and in developing those views of it which almost naturally arise, it is but due to the patentees to state, that the discovery of 'The Mosaic Gold' was not the result of accident, nor a fortuitous combination, but is the reward of a series of costly and laborious experiments, carried on at intervals for upwards of twenty years, and more particularly for the last three years; during which period the most active and unremitting perseverance has been used to obtain the metal in the state of perfection which the specimens exhibit.

"The richness of colour and close resemblance to gold possessed by this new metal, induced an individual, well qualified to appreciate its merits, to submit it to his Ma-

jesty, who, ever ready to promote the interests of science and the arts, has graciously condescended to permit the patentees to announce to the world that he patronises the invention. This gratifying encouragement, together with the boundless field of trade opened by the applicability of the Mosaic Gold to all purposes of the useful and decorative arts, at once convinced the patentees that their individual power would be utterly inadequate to establish and support the extensive manufactories, necessary to carry into execution the various lucrative objects that presented themselves. These considerations, and the great importance of the trade (even in a national point of view), which must result from the manufacture of an article possessing the qualities of the Mosiac Gold, have determined the patentees to grant licences for working it; as the best means of extending the interests, and diffusing the great benefits arising from the introduction of an article, which, as must be obvious to every one, admits, and will reasonably bear, considerably more than the ordinary profits of trade. This position will be best supported by the following statement of the *qualities*, *uses*, and *advantages* of the Mosaic Gold:—

"1. The Mosaic Gold possesses throughout its whole mass a rich golden colour, far superior to the colour of pure gold, and fully equal to that of its most beautiful alloys.

"2. It is capable of being cast and worked into any form, with the same facility as other metals.

"3. While the Mosaic Gold is so beautiful, when highly wrought and applied to articles of superior value, as to challenge a rivalry, in its appearance, with gold itself, it can also be produced in other states, which, as respect price, will admit of its being used for architectural and other embellishments.

"4. Being of a uniform colour throughout its whole substance, it is peculiarly applicable to articles subject to wear and friction.

"5. The Mosaic Gold, when applied to interior decorations and furniture, does not produce the unpleasant odour of bronze or brass.

"6. In case of accident, its original colour and lustre can be easily recovered by the ordinary modes of cleaning gold or silver.

"7. In addition to the above properties, the Mosaic Gold adds the invaluable one of not easily tarnishing or oxidizing, so that it may by simple means always be preserved in its original freshness and lustre.

"On this point a most decisive experiment has been made, by exposing several subjects, cast in Mosaic Gold, on the damp grass for eight weeks to the sea air, without any perceptible change or deterioration being produced in the colour; a fact which can be fully authenticated, and the particulars of which may be had of the patentees.

"The Mosaic Gold is peculiarly applicable to the following articles, each of which forms an extensive branch of trade.

"Articles of plate and jewellery—salvers—plateaus—branches—wine coolers, &c.—candelabra—chandeliers—lamps—chimney-pieces—clocks—balusters for staircases—railings—architectural decorations—friezes and capitals of columns—statues and groups—bas-reliefs—vases—medals—enrichments for domestic furniture of various kinds—carriage and harness furniture, &c. &c. &c.

"A valuable feature in this discovery, and most important as respects the Fine Arts, is, that from the metal being in itself, comparatively with gold, of small intrinsic value, liberal encouragement may be afforded for the

talents of our first artists, to make designs and models, from which articles in Mosaic Gold of unparalleled beauty may be manufactured; for all persons of taste who have visited the continent, and inspected the extensive manufactories of works of art in bronze, must lament how much we are excelled in this, perhaps the highest branch of manufacture; and it is therefore with pleasure the inventors can assure the public that extensive works, commenced under the most favourable auspices, are now erecting in the Regent's Park, which will afford every opportunity of attaining these desirable advantages.

"In order to place this invention on the most liberal plan, the Mosaic Gold will be sold to the trade in ingots, and licences may be obtained for working it."

Perpetual Motion.

A NEW project for a perpetual motion is about to be foisted upon the public, under the auspices and recommendation of a person who makes great professions of his scientific acquirements. The quackery of this individual has often obtruded itself upon our observation; but in the present instance, we are at a loss whether to attribute the imposition to sheer ignorance, or wilful deception: though one who has followed the occupation of a machinist in a very delicate branch of the arts, should certainly know something of mechanical science, and *therefore* ought not to lead the unwary projector astray.

The inventor of this project is said to be a *great* but unlettered *genius*. It is amusing to see persons who

have not been able to surmount the difficulties presented in acquiring a knowledge of the alphabet, (for that is the fact,) coming forward to prove to us that mathematical science is a farce, — that gravity is a nonentity, and that an eternity of action is within the reach of human construction. Whether there is in the air that envelopes the ancient city of Norwich from whence this emanates, any thing particularly conducive to the growth of genius, we know not, but there has lately arisen out of the same precincts a cobler, who professes to prove the chronologies of Moses to be mere fabrications, and the philosophy of Newton downright nonsense.

The proposed perpetual motion under consideration, consists of two tanks, filled with water, in each of which there are five casks occupied with air; to the ends of a scale beam vibrating upon a standard between the tanks, there are two pendant rods attached, having extending arms at bottom, which are considered to be elongations of the lever above. The ends of the casks are made to slide in grooves along the tank, and power being in the first instance given to depress the beam at one end, and force down the upper cask to the bottom of the water at that side of the tank which is nearest to the fulcrum, the three casks at the bottom become displaced, and sliding along the groove, one of them rises at the most distant side of the tank, and by its buoyancy acting against the elongated lever, forces up the beam with more power than is sufficient to depress the cask at the nearest side of the other tank. In this way, when the machinery is once put into motion, it is to continue going without any assistance, and is not only to be self-moving, but to exert a surplus of power which may be employed as the moving agent of other machinery.

The fallacy of this scheme will be obvious to such of our readers as form a tolerable notion of the construction of the machine from this loose description; we shall, however, in our next give the particulars, with a plate.

Method of Preventing the Fracture of Glass Chimneys.

THE glass chimneys which are now in such extensive use, not only for oil lamps, but also for the burners of oil and coal-gas, very frequently break, and not only expose to danger those who are near them, but occasion very great expence and inconvenience, particularly to those who are resident in the country. The bursting of these glasses very often arises from knots in the glass where it is less perfectly annealed, and also from an inequality of thickness at their lower end, which prevents them from expanding uniformly by heat. The best method of detecting the knots is to examine the glasses by polarized light, and reject those that exhibit at the knots the depolarized tints.

M. Cadet de Vaux (*Bull. des Sc. Tech.* Mars 1825, p. 180,) informs us, that the evil arising from inequality of thickness may be cured, by making a cut with a diamond in the bottom of the tube, and he remarks that, in establishments where six lamps are lighted every day, and where this precaution was taken, there was not a single glass broken for nine years.

Polytechnic and Scientific Intelligence.

ASTRONOMICAL SOCIETY OF LONDON.

Dec. 9.—The President informed the Society that when he had the honour of announcing, at their last meeting, the extraordinary occurrence of the appearance of *four* comets in the short space of as many months, he was little aware that he might at that time have added a *fifth* to the number. This last comet appeared, from the account stated in the public journals, to have been discovered by M. Pons, at the beginning of last month; but, as it had considerable *south* declination, and was advancing also to the southward, and at the same time very faint, it probably would not be seen in this country.

Although the appearance of so many comets in one year had been mentioned as a remarkable phenomenon, yet he would not wish to be understood as supposing that such a circumstance had never previously occurred; nor was likely to occur again. The fact was, that from the great attention which had been paid by astronomers to the discovery of these bodies within these few years, and the interest excited by the investigation of the laws by which they were governed, a more than ordinary di-

ligence had been employed in searching for them. And there was every reason to believe that if there were more labourers in the field, a still richer harvest would ensue: from which there might fairly be expected some additional light on the laws and constitution of the universe.

The President likewise called the attention of the members to the circumstance of the opposition of Mars in the month of May in the ensuing year. It was well known, he remarked, that by a comparison of the observations of this planet with the stars which were near it at that time, made at places situated in these latitudes and at other latitudes having considerable southern declination, the parallax of the planet might be readily deduced, and thence the parallax of the sun. As there were, at this time, two active observatories in the southern hemisphere, where this phenomenon would probably be attended to (as it had been at the two preceding oppositions), it were extremely desirable that corresponding observations should be made in the northern hemisphere: without which the observations made in the south would (as far as this subject is concerned), be rendered of little or no use. He trusted, therefore, that those practical astronomers who were possessed of the requisite instruments (and they were by no means complex or expensive) would attend to this phenomenon, and record the observations which they might have the advantage and opportunity of making; the uncertainty of this climate rendering it extremely desirable that all those, who had the means, should unite in so useful an undertaking.

For the convenience of such observers, the President announced that he had computed the right ascension and declination of six stars, near which Mars would pass a few days before and after his opposition: these being the

whole which he could find in any of the catalogues. They were here offered only as a mean of indentifying the star with which the planet may be compared. It was probable that other stars might be seen, in the field of view of the telescope; and that even some of these might not be found; for the catalogues of the smaller stars are still very imperfect. It would render observations of this kind more complete and useful, if regular observations of such stars as might be situated near Mars at the time of his opposition, were made at the public observatories; whereby the true position of the planet in the heavens would be more correctly ascertained.

The following are the mean positions of the stars above alluded to on the 1st of January, 1826.

Star.	Mag.	R			D		
		h	m	s	°	′	″
8 Libræ	6	14	41	5	—15	16	2
α ——	3		41	16	15	18	42
(195) P	8 9		43	0	15	40	36
L. L. X	7		46	38	16	5	12
(252) P	8 9		53	51	15	54	8
ν2 ——	6 7		57	7	15	48	13

The reading of the description of the large reflecting telescope and frame made by Mr. John Ramage, of Aberdeen, was terminated. Mr. Ramage has, ever since the year 1806, devoted much of his time to the construction of reflecting telescopes of larger size, and of convenient frames and supports, in which firmness of structure and facility of adjustment to any required position, should be equally attained. The telescope now described has a twenty-five feet tube. The platform upon which the tele-

scope is placed, and revolves at pleasure, is a strong circular rail-way of cast iron, twenty-seven feet and a half in diameter, and four inches in breadth. The horizontal azimuth motion is upon concentric rollers, round a central pivot. The stand or frame, though simple in its construction, cannot be very intelligibly described without a model or a diagram. The tube of the telescope is elevated to the required altitude by a winch and tackle of pulleys. The gallery in which the observer stands is adapted to the proper height by a similar winch and tackle; and to prevent accident from the breaking of the ropes, it is supported at each side by two moveable bars that fall into the steps of the ladders, which constitute a part of the frame. The lower end of the tube rests upon two rollers, and at great altitudes moves forwards, so that the tube itself is capable of adjustment to all positions, from that which is nearly horizontal to that, which is nearly vertical. Without quitting the gallery, the observer can move the tube both horizontally and vertically upwards of 10°, and can with the utmost readiness (independently of an assistant) direct the telescope to any point in the heavens. All the motions are effected by means of a very few cords, pulleys, and winches. The diameter of the speculum is fifteen inches, and the focal length twenty-five feet. The eye-pieces, which are adapted to magnify the image, possess powers varying from 100 to 1500; and there are proper diaphragms to modify the redundancy of light. The mode of observing is by the "front view."

Mr. Ramage exhibited to the Society, besides a neat model of the tube and apparatus, two speculums: one of fifteen inches diameter, belonging to the telescope described, and another of twenty-one inches diameter and fifty-four feet focus.

There was next read a paper on the subject of Parallaxes, taking the word in an enlarged sense, by M. Littrow. It was in the excellent treatise of Lagrange on the determination of the solar parallax, from the observed transits of the inferior planets over the sun's disc, where the rectangular co-ordinates were first employed, instead of the less convenient expressions of spherical trigonometry, for the purpose of deducing the apparent station of a planet from its longitude and latitude. The process has been since improved by Olbers, Bessel, Rhode, &c. But M. Littrow regards it as susceptible of still further improvements, which he has here exhibited. He gives the analytical solution of several problems; viz.

1. To determine the apparent longitude and latitude of a star, from the true geocentric longitude and latitude.

2. To solve the inverse problem.

3. and 4. The solution of the preceding problems by series.

5. To find the apparent right ascension and declination, from their true magnitudes, and *vice versâ.*

6. To determine the apparent azimuth and altitude, from their true magnitudes, and *vice versâ.*

7. and 8. To find the true place of the star, from its apparent place, and *vice versâ*, without any reference to the horizon, the ecliptic, and the equator, which is often useful in computing the occultation of fixed stars by the moon.

9. A general problem, to find the apparent azimuth and apparent altitude, from the true longitude and the true latitude of a star.

The resulting expressions for these several solutions

are analytically simple. These which are deduced in series are usually of this kind, namely.

$$\log c = \log b - \left(\frac{a}{b}\right) \cos \theta - \tfrac{1}{2}\left(\frac{a}{b}\right)^2 \cos 2\,\theta$$
$$- \tfrac{1}{3}\left(\frac{a}{b}\right)^3 \cos 3\,\theta, \text{ \&c.}$$

in which the *law* is evident.

M. Littrow concludes his paper, by suggesting the application of his principal formulæ to the solution of various other problems.

Lastly, there was read a paper, entitled, A memoir on different points relating to the theory of the perturbations of the planets expounded in the *Mécanique Céleste*, by M. Plana, Astronomer Royal at Turin, and an associate of this Society.

The object of the author in this memoir, he states to be an examination of various points in the theory of the planetary perturbations, as explained by M. de Laplace in the *Mécanique Céleste*. In undertaking this labour, he observes, he at first had no expectation of meeting with any instance in which an actual rectification of the results already arrived at would be necessary; but the progress of late made in the theory of perturbations having enabled him to treat certain particular questions more generally, and with more symmetry than heretofore, it is not to be wondered at if he has been led to results which surpass in exactness those hitherto published. But in all such cases, he adds, where he has arrived at conclusions not in accordance with those of the illustrious author of the *Mécanique Céleste*, he has thought it incumbent on him to give with the fullest detail, not only the developments, but even the arithmetical calculations on which these conclusions have been founded.

The 1st chapter is devoted to the consideration of that artifice in the *Mécanique Céleste* in which M. Laplace transfers his formulæ from the mean motions, axes, &c. of the primitive or undisturbed orbits, which are not given by observation, to those of the disturbed, which are given as they exist in nature. This he does by assuming an arbitrary constant introduced in one of the integrations by which the perturbation in longitude is derived, in such a manner as to make the term in the result which depends on the mean motion vanish. M. Plana devotes this chapter to the elucidation of this artifice, and shows the correctness of M. Laplace's results by obtaining the same conclusion by another, and direct method. He then applies his reasoning to numerical examples, and computes the quantity by which the moon's mean distance from the earth is *permanently* altered by the sun's action, which he finds to be about 1-100th of the radius of the globe of the moon, in augmentation, the corresponding increase of the periodic time being about 1-4th of a day. The excentricity too undergoes an alteration in its *mean* quantity from the same cause, equal to about 0.0007 of its actual amount.

A similar artifice in the use of an arbitrary constant added in one of the necessary integrations for arriving at the first term of the motion of the moon's perigee, M. Plana observes, has enabled M. Laplace to avoid an error in that research to which his method seemed to expose him, and to obtain the true result. But he proceeds to show that this artifice is not necessary, and that the same result may be obtained without the use of the superfluous constant, by the aid of an equation he deduces for the variable portion of the moon's radius vector.

The method employed by M. Plana has the advantage,

he observes, of keeping distinctly in view throughout the whole analysis the primitive elements, uninfluenced by the effect of perturbation. The other he states to have been first employed by Lagrange in the volume of the Memoirs of the Academy of Berlin for 1783.

The author next proceeds to examine those parts of the theory of perturbations, which depend on the non-sphericity of the central body, and in which he remarks that the use of a similar artifice in the *Mécanique Céleste* is accompanied with greater obscurity, as a portion only of the arbitrary constant is retained. He therefore enters on the investigation without the use of this artifice, and deduces the results for the perturbations of the planets due to the ellipticity of the sun by the formulæ for the variation of the arbitrary constants.

The author next applies the same method to the theory of the perturbations of the seventh satellite of Saturn by the elliptic figure of the planet; and as he here arrives at final equations somewhat differing from those of M. Laplace, the whole process is given in copious detail.

The 2d chapter of this paper is devoted to the consideration of the effect of the actions of the fixed stars on the secular variations of the planetary system. The expressions for the secular variations of the excentricity and aphelion which the author brings out, agree perfectly with Laplace's in form, but differ in the numerical coefficients, one of the terms having the coefficient $\frac{15}{4}$ where Laplace has $\frac{8}{4}$, and $-\frac{3}{2}$ where Laplace makes it -1. As he subsequently observes, however, the action of the stars cannot possibly become sensible till after the lapse of many hundreds of centuries; so that these discrepancies are practically of no import-

ance. He remarks, too, that this cause of perturbation prevents the equations between the squares of the excentricities, the masses, and square roots of the axes, so often referred to as insuring the stability of the planetary system,—as well as the similar one between the squares of the tangents of the inclinations, the masses, and square roots of the axes,—from being mathematically exact. It will be noted, however, that these equations can only be regarded as proved for the first powers of the disturbing forces, while the action of the stars is at least of the order of their squares or even cubes.

The 3rd chapter is devoted to the evaluation of those terms in the theory of the perturbations of Mercury by the Earth, whose coefficient, being divided by the square of the difference between the mean motion of Mercury and four times that of the Earth, may acquire a notable value by the smallness of its divisor. The author first examines the indirect method followed by M. Laplace, which he considers defective, and in some measure illusory, and then substitutes a method of his own. After going through all the very laborious calculations of the analytical and numerical values of the coefficients, he arrives at a final result, of which he remarks, that although it differs very little from that given in page 98 of the third volume of the *Mécanique Céleste*, and in page 32 of the tables of Mercury, published by M. Lindenau, yet this apparent accordance is merely a consequence of the excessive smallness of the numerical coefficient of the term in question, and that his objec has rather been to rectify the analytical formulæ than the numerical results, by taking into consideration *all* the terms of the same order, without which he considers it very possible to commit material errors in the final results of such operations.

The 4th chapter has for its object an examination of M. Laplace's method of taking account of the square of the disturbing force in the theory of the great inequality of Jupiter and Saturn.

In this investigation the author is led to conclude that the equation connecting the reciprocal perturbations of the mean motions of two planets, and by which the one may be derived from the other by a simple multiplication, holds good only when the first powers of the disturbing forces are considered (a consequence, it may be observed, one might naturally presume from the form of the multiplier itself, into which the simple ratio of the masses only enters as a factor.)

$$\left[\zeta' = -\frac{m}{m'}\sqrt{\frac{a}{a'}}\,\zeta,\right]$$

M. Plana gives this part of his paper with the fullest possible detail, in order, he observes, to enable astronomers to verify every part of the developments and calculations; and on reducing his formulæ to numbers, obtains, (not, as he says, without surprise) a final result of a contrary sign to that of Laplace, and only one third of its amount, the coefficients of the terms of the great inequality arising from the square of the disturbing force being according to M. Plana

— 1″·9200 and + 5″·5775 for Jupiter
+ 25″·1036 and — 12″·8932 for Saturn.

The 5th chapter contains reflections on the Supplement to the theory of Jupiter and Saturn in the fourth volume of the *Mécanique Céleste*, page 327—344; in which M. Laplace considers several terms of the order of the square of the disturbing force arising from the variation of the excentricities and perihelia of the two planets, affected by the argument of the great inequality. M.

Laplace has made use of an indirect but more expeditious method; and the object of the author in this chapter (admitting, however, that the indirect method cannot fail to give results very near the truth) is to estimate their degree of accordance with those afforded by the direct method. His conclusions in a numerical point of view agree with those of Laplace, but he conceives that his analysis is more rigorous, and his formulæ better adapted to further developments.

Further Report of the Select Committee of the House of Commons, appointed to enquire into the State of the Laws in the United Kingdom, and their Consequences as respects Artizans leaving the Kingdom, and residing Abroad; also respecting the Exportation of Tools and Machinery; and on the Combination of Workmen and others, to raise Wages, and regulate Hours of Working.

JOSEPH HUME, ESQ. in the Chair.

RICHARD BATENSON DEAN, ESQ. examined. The deponent is Chairman of the Board of Customs: produced a list of Acts of Parliament relating to the exportation of machinery, and artizans quitting this country.

7 and 8	William III.	c. 20.	22	George III.	c. 60.
5	George I.	c. 27.	25	. .	c. 67.
23	George II.	c. 13.	26	. .	c. 89.
14	George III.	c. 71.	35	. .	c. 38.
21	. .	c. 37.			

Mr. D. thought it nearly impossible to enforce those laws, they are not efficient; the officers cannot tell who are artificers; those which have emigrated to America, or the continent, have usually gone as husbandmen; does not think any laws could be enacted, which would

in such cases operate effectually. Liverpool and Bristol are the chief places from which emigrations take place to the colonies; as to Dover, where most embark for the continent, there is no means of knowing who are the persons that cross the channel. Mr. D. is of opinion that no injury could arise from removing these laws altogether. There have been prosecutions under these acts, but they have wholly referred to machinery.

As to the laws prohibiting the exportation of machinery, Mr. D. considers the effects of their operation very doubtful, as all articles going out of the country cannot undergo strict examination; few of the officers are able to distinguish what description of machinery a great variety of pieces belong to; thinks that the laws have been evaded in numberless instances. A merchant making an entry of certain goods, it is the business of the searchers to examine a part of the packages, to see if it is of the kind described. If an entry is made under the head machinery, it would be the duty of the searchers to see whether any of that machinery was prohibited by the acts; but the wharfs do not afford facilities for making that strict examination, and if it did, the number of officers employed must be quadruple.

The difficulty attendant upon the execution of those laws is very great; there are perpetual questions arising as to what comes within the letter of the act; the board is always reluctant to put the law in force. There have be orders of council to pass certain prohibited goods, but these are of rare occurrence, and the articles have been mostly presents.

Mr. Richard Taylor examined. Has been a printer in London about twenty years; is of opinion, that the laws prohibiting men from combining to regulate wages and hours of working, is of no service to the employer,

and only creates a difficulty in agreeing upon terms. They are so objectionable, that when the men struck for wages, the masters resolved not to avail themselves of the combination laws, considering them unjust and oppressive; they tend to disturb that good feeling which ought to subsist between the masters and the men. Many years ago, some of the most respectable of the men, who had been delegated to negociate an advance of price with the masters, were imprisoned, which created very great disorder and mischief in the trade.

In the printing business, the masters have of late years been in the habit of meeting to confer with the men, and to regulate prices according to circumstances. Mr. T. considered, that if the laws were repealed, no disadvantage would arise to the masters, and indeed, that a better understanding would be produced, for the men in general consider them oppressive.

Mr. T. recollects instances of men being prosecuted for combining, but does not remember any instance of masters being prosecuted, for under the same laws, he did not suppose that they were amenable. If the combination laws were repealed, it would certainly not be disadvantageous to the masters, and would produce a better understanding. When the men combined many years back to prevent us taking apprentices, they were prosecuted, but we have since defeated them without law, by teaching the lads ourselves.

On being asked if the general combinations of trades, which seems now to prevail among the workmen, would be likely to die away gradually, if the laws were repealed, Mr. T. replied, that he thought both parties would come to an understanding sooner without the combination laws; both parties would be more reasonable in their demands.

New Patents Sealed, 1825.

To Augustus Count de la Garde, of St. James's-square, Pall Mall, in the county of Middlesex, in consequence of a communication made to him by a certain foreigner residing abroad, for a certain improved machinery for breaking or preparing hemp, flax, and other fibrous materials—Sealed 24th November—6 months for inrolment.

To Joseph Eve, late of Augusta Georgia, in the United States of America, but now residing at Liverpool, in the county of Lancaster, engineer, for his invention of an improved steam engine—24th November—6 months.

To Henry King, of Norfolk-street, Commercial-road, in the county of Middlesex, master mariner, and William Kingston, of our Dock Yard, Portsmouth, master millwright, for their invention and discovery of certain improved fids for top-masts, bowsprits, and all other masts and spars to which the use of the fid is applied—26th November—6 months.

To Richard Jones Tomlinson, of the city of Bristol, gentleman, for his invention of an improved frame-work for bedsteads and other purposes—26th November—6 months.

To Marc Lariviere, of Prince-square, Kennington, in the county of Surrey, machinist, for his invention of a certain apparatus or machinery to be applied to the well known stamps, fly presses, or other presses for the

purposes of perforating metal plates, and for the application of such perforated metal plates to various useful purposes—28th November—6 months.

To William Pope, of Ball Alley, Lombard-street, in the city of London, mathematician, for his having invented certain improvements on wheeled carriages—3rd December—6 months.

To William Pope, of Ball Alley, Lombard-street, in the City of London, mathematician, for his having invented certain improvements in making, mixing, compounding, improving, or altering the article of soap—3rd December—6 months.

To Henry Berry, of Abchurch-lane, in the city of London, merchant, for his new invented improved method in different shapes or forms of securing volatile or other fluids, and concrete or other substances in various descriptions of bottles and vessels—3rd December—6 months.

To Ezekiel Edmonds, of Bradford, in the county of Wilts, clothier, for his invention of certain improvements on machines for scribbling and carding sheep's wool, cotton, or any fibrous articles requiring such process—3rd December—6 months.

To John Beever, of Manchester, in the county of Lancaster, gentleman, for his having invented an improved gun-barrel—3rd December—6 months.

To Edmund Lascombe, of East Stonehouse, in the county of Devon, merchant, in consequence of communications made to him by a certain foreigner residing abroad, and discoveries made by himself, for a method of manufacturing or preparing an oil or oils extracted from certain vegetable substances, and the application thereof to gas light and other purposes—6th December—6 months.

To John Phillips Beavan, of Clifford-street, in the county of Middlesex, gentleman, in consequence of communications made to him by a certain foreigner residing abroad, for an invention of a cement for building and other purposes—7th December—6 months.

To Francis Halliday, of Ham, in the county of Surrey, Esquire, for his invention of certain improvements in machinery to be acted upon by steam—9th December—6 months.

To Joseph Chesseborough Dyer, of Manchester, in the county of Lancaster, patent card manufacturer, for his invention of certain improvements in machinery for making wire cards for carding woollen, cotton, tow, and other fibrous substances of the like nature, and also certain improvements on a machine for shaving and preparing leather used in making such cards—9th December—6 months.

To Robert Addams, of Theresa Terrace, Hammersmith, in the county of Middlesex, gentleman, for his new invented method of propelling or moving carriages of various descriptions on turnpike, rail, or other roads —14th December—6 months

To Matthew Ferris, of Longford, in the county of Middlesex, calico printer, for his new invented improvements on presses or machinery for printing cotton and other fabrics—14th December—6 months.

To James Ashwell Tabor, of Jewin-street, Cripplegate, in the city of London, gentleman, for his having invented or found out means for indicating the depth of water in ships and vessels—14th December—2 months.

D.	H.	M.	S.	
1	0	0		♃ Stationary
1	0	21	0	☾ in □ last quarter.
2	16	49	50	♃'s 1st Sat. will immerge.
4	12	0	0	☾ in conj. with δ in Scorpio.
6	16	0	0	☾ in conj. with 1 μ in Sag.
6	17	0	0	☾ in conj. with 2 μ in Sag.
6	18	0	0	☾ in conj. with ♀ long. 1° in Cap. ☾ lat. 1° 48′ N. ♀ lat. 6′ N. diff. lat. 1° 42′
6	20	0	0	☾ in conj. with ☿ long. 1° in Cap. ☾ lat. 1° 48′ N. ☿ lat. 3° 18′ N. dif. lat. 1° 30′
7	21	39	0	Ecliptic Conjunction or ● New Moon.
8	22	0	0	☽ in conj. with β in Cap.
9	18	43	8	♃'s 1st Sat. will immerge.
11	0	0	0	☿ Stationary.
11	13	11	27	♃'s 1st Sat. will immerge.
13	16	0	0	♀ in conj. with 1 ν in Sag.
15	14	0	0	♀ in conj. with ο in Sag.
15	16	38	0	☽ in □ first quarter.
17	15	0	0	☽ in conj. with δ in Aries.
18	15	4	49	♃'s 1st Sat. will immerge.
18	16	0	0	☽ in conj. with A in Tau.
19	1	0	0	☽ in conj. with 2 κ in Tau.
19	18	0	0	☽ in conj. with ι in Taurus.
19	20	0	0	☽ in conj. with ♄ long. 15° in Gemini ☽ lat. 25′ S. ♄ lat. 1° 27′ S. diff. lat. 1° 2′
20	0	11	0	☉ enters Aquarius.
20	9	0	0	☽ in conj. with ζ in Taurus.
20	9	33	11	♃'s 1st Sat. will immerge.
21	1	0	0	☽ in conj. with η in Gem.
21	5	0	0	☽ in conj. with μ in Gemini.
21	8	0	0	☾ in conj with ν in Gem.
21	13	0	0	♂ in conj. with κ in Virgo.
21	23	0	0	☽ in conj. with ζ in Gem.
22	3	0	0	♀ in conj. with ♅ long. 20° in Cap. ♀ lat. 29′ S. ♅ lat. 27′ S. diff. lat. 2′
23	12	2	0	Ecliptic opposition or ☉ full moon.
24	0	0	0	☾ in conj. with 1 α in Can.
24	1	0	0	☾ in conj. with 2 α in Can.
24	12	0	0	☿ in conj. with 1 ν in Sag.
24	20	0	0	☾ in conj. with ο in Leo.
24	20	0	0	♂ in conj. with λ in Virgo.
25	5	0	0	☾ in conj. with π in Leo.
25	16	58	13	♃'s 1st Sat. will immerge.
26	16	0	0	☿ in conj with ο in Sag.
27	11	26	37	♃'s 1st Sat. will immerge.
27	16	0	0	☿ in conj. with π in Sag.
29	2	0	0	☾ in conj. with i in Virgo.
30	8	9	0	☾ in □ last quarter.
31	15	0	0	☾ in conj. with λ in Libra.
31	17	0	0	☾ in conj with δ in Sco r io

The waxing ☽ moon—the waning moon ☾

Rotherhithe. J. LEWTHWAITE.

METEOROLOGICAL JOURNAL, November and December, 1825.

1825.	Thermo. Higt.	Thermo. Low.	Barometer. +	Barometer. —	Rain in inches.	1825.	Thermo. Higt.	Thermo. Low.	Barometer. +	Barometer. —	Rain in inches.
Nov.						Dec.					
26	55	30	30,04	29,70		11	48	35	29,74	29,65	,075
27	44	35	29,86	29,70	,5	12	40	30	29,79	29,74	,05
28	53	41	29,30	29,17	,125	13	48	32	29,70	29,65	
29	52	39	29,00	28,87	,625	14	53	33	29,32	29,25	,475
30	39	30,5	29,54	29,30	,15	15	42	33	29,66	29,45	,225
Dec.						16	52	37	29,80	29,60	,05
1	37	22	29,65	29,30		17	53	40	29,70	29,57	,125
2	45	36	29,00	28,90	,1	18	52	35	29,60	29,50	,125
3	45	35	29,22	29,10	,625	19	50	40	29,35	29,30	,1
4	39	35	29,30	29,10		20	49	36	29,40	Station	,025
5	43	27	29,26	29,30	,2	21	52	42	29,38	29,37	
6	50	37	29,37	29,30	,625	22	49	45	29,60	29,40	
7	51	37	29,24	29,20		23	47	35	29,77	Station	
8	45	39	29,30	29,28		24	40	31	30,00	29,90	,1
9	46	41	29,50	29,37		25	52	33	29,70	Station	,025
10	44	40	29,64	29,54	,05						

CHARLES H. ADAMS, LOWER EDMONTON.

LITERARY AND SCIENTIFIC NOTICES.

A Varnish, to preserve fresco paintings from the effects of air, has, it is stated, been discovered at Naples, *by an Artist named Celestino.*

The third volume of the works of Canova, on Sculpture and Modelling, engraved in outline by Henry Moses, has been for some time in preparation. It will consist of six double Parts, each containing ten engravings, with descriptions from the Italian of Countess Alfrizzi. The first part is announced to appear in January, and a part regularly on every succeeding month, until completed.

Two volumes of the History of Printing in Italy, from the period of the revival of the fine arts, to the end of the eighteenth century, translated from the originial Italian of the Abbate Langi Lanzi, by Thomas Roscoe, Esq. will be speedily published; and five volumes, demy 8vo. will complete the work.

Silk Worms.—The decrease of the duties on the importation into this country of foreign silk goods, seems to have given a stimulus to the manufacture on the Continent.

At Berlin, M. Bolzani, an Italian, has undertaken, with much apparant success to revive the culture of silk worms in Prussia, where it has been abandoned since the reign of Frederick II.

The king has granted him a portion of the Hospital of Invalids; and he has, besides, obtained, on payment of a certain rent, the privilege of availing himself of the mulberry trees in the garden of that establishment. Mr. Bolzani has induced a number of female silk spinners to emigrate from Italy to Prussia; and is very well satisfied wtth the progress which he has made in the present year.

It is with considerable pleasure we learn, that the Specimens of *Ancient Mexican Sculpture*, which were lately exhibited at the Egyptian Hall, have been recently transferred to British Museum; where they form a curious addition to the remains of the ancient Sculpture of Egypt, Greece, Italy, and India, there deposited. It is reported that it was the intention of Lord Grenville, had they not been obtained for the National Museum, to have become the purchaser, for the purpose of presenting them to the University of Oxford.

Mr. Cook has put forth the first part of a work, entitled the Beauties of Claude Lorraine, from the *Liber Veritatis*. The selection is from a unique copy of Earlour's Engravings, in the possession of his Grace the Duke of Bedford, which copy was originally presented to the late Paul Sandby, and contains the earliest impressions of the work. The present selection has been carefully and beautifully executed on steel, by artists fully competent to the task, viz. T. Lupton, J. Bromely, G. H. Phillips, G. H. Every. The work will be completed in two Parts, each containing twelve plates; the Part under notice is got up in the usual tasteful and splendid way in which Mr Cook's publications are sent into the world. The accompanying biographical sketch of the life of Claude, is from the pen of Mrs. Hofland, and does great credit to her talents in this style of writing.

Sir Thomas Lawrence, we are informed, is painting a portrait of the infant Duke of Bourdeaux, which His Majesty has requested from the king of France. Gerrard's picture of the same has been sent to St. Petersburgh.

A new Irish Quarterly Magazine is announced for publication by Mr. Bolster, a Bookseller of Cork, to commence with the new year. Among his contributors, he states, are many of the most distinguished writers in the leading Magazines of the day.

Mr. Walter, one of the Librarians of the British Museum, is preparing for publication, a Translation of G. B. Niebuler's History of Rome.

Tusculum.—The king of Sardinia has ordered the excavations on the site of ancient Tusculum to be carried on with assiduity, and some very interesting remains have been discovered, and on which are columns, mosaics, inscriptions, sculpture, and paintings.

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THE

London

JOURNAL OF ARTS AND SCIENCES.

No. LXIV.

Recent Patents

To JOSEPH CROWDER, *of New Radford, in the County of Nottingham, Lace Net Manufacturer, for his Invention of certain Improvements on the Pusher Bobbin Net Machine.*

[Sealed 31st May, 1825.]

IN our Xth Vol. pages 180 and 225, will be found the specifications of Lingford's and Mosley's patents for improvements in machinery for manufacturing bobbin net lace, where we have taken occasion to mention the variety of principles upon which machinery has been constructed for making that article. The present invention is not a new kind of machine for the production of bobbin net lace, but certain improvements consisting of alteration in the arrangement of old parts, and the introduction of new ones, applied to that particular description of machine called the *pusher*, by which the mechanism is con-

siderably simplified, and the work produced with greater rapidity, than by the pusher machines already in use.

The patentee says his improvements on the pusher bobbin net machine are designed for the purpose of reducing the number of motions of the mechanism, requisite to the formation of the hole or mesh of the net in that particular kind of machinery. In the ordinary pusher machine (commonly called Crowder and Day's improved pusher, first introduced in the year 1820), *fourteen* general motions of the mechanism are requisite to complete the twists of the threads in the formation of one hole or mesh, but in the present improved pusher, only ten motions are requisite to effect that object, by which time and labour is economized in the proportion of five to seven, and the expence of the workmanship is necessarily reduced about one quarter.

These improvements may be divided into three principal heads; 1st, the employment of two series of pushers on each side of the machine; which are attached to two distinct bars in the front of the machine; and to two distinct bars in the back of the machine; these are termed the upper and lower front pusher bars, and the upper and lower back pusher bars; 2ndly, in the employment of a single bar, carrying a series of guides for conducting the whole series of warp threads, in place of the two bars heretofore used in a pusher machine for the same purpose; to which is to be adapted certain cam wheels, (or what is commonly called Dawson's wheels) to effect that sliding or lateral movement of these bars, which is usually termed shogging; 3rdly, the introduction into a pusher machine of two bars which are called locker bars or fetchers, similar to bars of the same denomination employed in a *Levers'* bobbin net machine: these bars are for the purpose of drawing away the bobbins and car-

riages through the warp threads after they have been projected by the pushers, from the opposite side of the machine; and also the mechanism necessary for actuating these locker or fetcher bars.

In order to render these improvements evident, a vertical section taken across the machine, near the middle, is shewn in Plate III. at fig. 1, and a horizontal view partly in section, of one end of the machine, is represented at fig. 2; in which figures the situations and actions of the above mentioned improved parts are shewn, and are referred to by similar letters in both. It should, however, be here premised, that a pusher machine upon the principle called Crowder and Day's improved pusher, being well understood by competent workmen in the trade, and not claimed under the present patent, the patentee has thought it sufficient merely to shew and describe the general construction of such a machine, in order to point out clearly the manner of adopting, and the use of the several newly introduced parts, constituting the present improvements when attached to, or combined with, the principal parts of the mechanism of a machine constructed upon the pusher principles.

There are in these kind of machines for twisting or weaving the threads together to make lace, a series of threads called the warp threads, passing perpendicularly from the beam or roller, *a*, through guides, *c*, to the beam, or roller, *e*, which threads are ranged along the whole extent of the machine; there are also a series of bobbins and carriages, *g*, answering the purpose of shuttles in looms, which conduct the weft threads through between the warp threads. These bobbins are moved to and fro, by what are called pushers, *h*, *i*, *j*, *k*, and by fetchers, *l*, and *m*, and the movements of the mechanism shifting the guides or the bobbins laterally, cause the threads, as the course

goes on, to cross and twist round each other, which twist or crossing of the threads, after every course is taken down and confined by a series of points, *d*, like needles, and thus the series of meshes or holes of the net are produced or woven along the whole length, or what is more properly called the breadth of the machine.

The operative parts are as follows; *a*, is the roller or beams upon which the warp threads are wound, these threads pass from the roller through the slay, *b*, and thence through the guides, *c*, down to the points, *d*, toward the work roller, *e*—*f*, *f*, are the back and front bolts, upon which the bobbin carriages, *g*, slide to and fro; *h* and *i* are the two series of back pushers; *j* and *k* are the two series of front pushers; these being actuated by means hereafter to be explained, strike against the ears of the bobbin carriages, and project them from the back to the front bolts, and from the front to the back bolts alternately; *l* is the back locker or fetcher bar, *m* is the front locker or fetcher bar, which falling upon the inclined planes, on the inner sides of the ears of the carriages, *g*, draw them back to the extent of the bolt.

The operations of the machine are performed by moving the arms, *n*, *n*, which are suspended from the longitudinal spindle bars at top, and are attached together by a cross bar passing under the work roller. On drawing out the front arms, *n*, the back arms, *n*, will move inwards, raising the locker bar, *l*, and driving the pushers, *h* and *i*, which project the carriages, *g*, from the back to the front bolts; the pushers, *j* and *k*, retiring at the same time, and the locker bar, *m*, dropping upon the ears of the carriages, draw the carriages to the extent of the bolts, as above said. On moving the front arms, *n*, inward, the back arms, *n*, will of course retire, the locker bar *m*, rising, when the pushers

i and *k*, project the carriages, *g*; from the front to the back bolts, and the locking bar, *l*, falling upon the ears of the carriages, draws them to the back of the bolt, the mechanism assuming the positions seen in the section, fig. 1.

The oscillating movements of the arms, by which the pushers are made to drive the bobbin carriages to and fro through the warp thread, having been described, we proceed to explain the means of shogging, or giving the lateral movements to the several bars, for the purpose of shifting the situations of the bobbins, and causing the bobbin threads to twist round the warp threads as they pass to and fro. This will be more evidently seen by reference to the horizontal view of the end of the machine shewn at fig. 2.

A barrel, *o*, *o*, is placed transversely at the end of the machine, in a horizontal position, turning upon pivots; this barrel carries several cam wheels and two ratchets, and is the apparatus known as "Dawson's wheels." The barrel is actuated by perpendicular drivers connected with the vibrating spindles at top, from which the arms, *n*, *n*, are suspended; and as these arms oscillate, the drivers rise and fall, which drivers acting upon the peripheries of two ratchet wheels, *p*, *p*, (having five teeth in each) drive them and the barrel one entire revolution by ten strokes or oscillating motions of the machine; this, however, is a contrivance well known. Upon this barrel there are seven cam wheels, cut with suitable elevation for shogging or sliding laterally the four pusher bars, the one guide bar, and the two bolt bars, there being sliding pieces connected to the ends of these bars, acting severally against the peripheries of the respective cam wheels. Though the performance of the mechanism depends principally upon the accuracy with which the elevations

and depressions upon the peripheries of these seven cam wheels are cut, it is not possible to state the diameters of the parts of the several cams, as that will always depend upon the gauge of the machine, or in other words, upon the number of bobbins to be employed in every inch; but the mode of cutting these cam wheels suited to any kind of lace machine is well understood by the trade.

Supposing the several parts of the mechanism to be in a situation for beginning the formation of a mesh or hole of the net, as shewn in the two figures, the bobbin carriages, *g*, being all in the back bolt bar, the first stroke of the machine is made by drawing out the front arms, *n*; this causes the back locker bar to rise and the back pushers, *h* and *i*, to drive all the bobbin carriages, *g*, from the back to the front bolts, *f*, and the front locker bar, *m*, falling, draws the carriages to the extent of the bolts; at the same time a stroke of the drivers attached to the front top spindle bar, as before mentioned, falls upon the ratchet, *p*, and drives the barrel, *o*, one-tenth part of its revolution; this causes the cam wheel, *q*, to shog the lower front pusher bar, *k*, one gate or space to the left, and the cam, *r*, to shog the upper pusher bar, *j*, two spaces to the left, the cam *s*, to shog the guide bar, *c*, one space to the left, the two bolt bars, *f*, *f*, and the two back pusher bars, *h* and *i*, having remained stationary; this admits of the bobbins and their carriages at the next stroke to pass on the right sides of the warp threads. Pushing the front arm, *n*, inwards, gives the second stroke of the machine, this sends in the pushers, *j* and *k* which drive all the bobbin carriages from the front to the back bolts, *f*, passing the bobbins on the right of the warp threads as above said, the locker bar, *l*, having fallen and drawn back the carriages as explained before; this stroke of the machine has caused the driver connected

to the back top spindle bar to drive the other ratchet wheel, *p*, and with it the barrel, *o*, one-tenth of a revolution as before, and to bring the cam, *t*, to act against the end of the back bolt bar, *f*, and to shog it one space to the left and the cam, *v*, to shog the lower back pusher bar, *i*, one space to the left, the upper back pusher, *h*, the two front pusher bars, *j* and *k*, the front bolt bar and the guide bar, *c*, remaining stationary. Drawing out the front arms, *n*, to produce the third motion, causes the back pushers, which now stand exactly over each other, to project one-half of the bobbin, that is, every alternate bobbin carriage from the back to the front bolts, passing them on the left of the warp thread. The barrel, *o*, has now proceeded three-tenths of its revolution, when a recess in the cam, *r*, allows the upper front pusher bar, *j*, to slide one space to the right, (helical or worm springs being attached to all the bars, for the purpose of keeping their ends up against the cams or stops;) the other bars are all stationary at this part of the operation. The fourth movement, the front arms, *n*, are pushed inward, but owing to the situation of the front pushers, they now pass between the carriages which rest upon the front bolts, and produce what is termed a blank motion, that is, without effecting any change in the situations of the bobbin carriages, but only causing the the driver to rack the ratchet one tooth, and bring the barrel, *o*, into the fourth position. The cams now are so placed as to cause the front bolt bar, *f*, to shog one space to the left, and also the lower front pusher bar one space to the left, the back bolt bar one space to the right, the upper front pusher bar, the two back pusher bars, and the guide bar being all stationary. The fifth motion of the front arms, *n*, outward, causes the back pushers to drive the other half set of bobbin carriages from the back to

the front, the bolts passing them now on the left sides of the warp thread, consequently the third and fifth motions have crossed the bobbin threads upon the warp thread. At this part of the operation the front point bar, *d*, is raised by a lever, actuated by a snail upon a transverse axle not shewn; this lever, by pressing upon the arm, *u*, extending from the point bar, withdraws and raises the points out of the work, and then letting the bar fall again, causes the points, *d*, to take down the crossed or twisted thread last described, and so complete one half of the hole or mesh. This last mentioned apparatus is well known in the trade under the name of Kirkland's Point-tackle. The cams upon the barrel now shog the lower front pusher bar one space to the right, the upper front pusher bar one space to the left, the front bolt bar one space to the right, the guide bar one space to the left, the back bolt bar and the two back pusher bars being stationary.

At the sixth movement the front pushers, *j* and *k*, project all the bobbin carriages from the front to the back bolts, passing them on the right sides of the warp threads, when the cams on the barrel will shog the lower back pushers, *i*, one space to the right, the upper back pushers, *h*, one space to the left, and the guides, *e*, one space to the right, the other bars remaining stationary. The seventh movement brings all the bobbin carriages from the back to the front, passing them on the left sides of the warp thread; the cams now shogging the upper front pusher, *j*, one space to the right, the guides, *e*, one space to the left, the back bolts, *f*, one space to the left, the lower back pushers one space to the left, the other bars remaining stationary

At the eighth movement the half of the bobbin carriages, as before, are pushed from the front to the back bolts, passing on the right sides of the warp thread; the

cam, s^3, now shogs the guides one space to the left, all the other bars remaining stationary; and, at the ninth movement, the pushers advance from the back, without touching the carriages, which is a blank movement, half the carriages being situated in the front bolts, and the other half in the back bolts. The cams now shog the front bolts one space to the left, the back bolts and the two series of back pushers one space to the right, the two front pusher bars and the guide bars being stationary. The tenth movement projects the half set of carriages from the front to the back bolts, through on the right side of the warp threads, and by the eighth and tenth movements produce the crossing of the threads upon the warp. At this time the back point bar is drawn out of the work, and raised as before described, and on falling the points take down the crossing, or twist of the thread, and complete the hole or mesh. The cam barrel now shogs the front lower pushers one space to the right, the front bolts one space to the right, the guides two spaces to the right, the upper back pushers one space to the left, and the remaining bars are stationary; this is the situation of the cams at the commencement of the ten motions. At the left end of the machine a pusher is to be removed from each of the front bars, in order to effect what is called the traverse.

It is to be observed, that at every motion of the machine, one of the locking or fetcher bars falls against the ears of the carriages, for the purpose of drawing them back from between the warp threads, as above described. The rising and falling actions of these locker bars are produced by pieces of mechanism, having inclined planes attached to arms, *w*, extending from the locker bars seen in fig. 1., and by tappets or friction rollers, *x*, *x*, on the sides of the oscillating arms, *n*. Both sides of

this piece of mechanism are seen in the figure as attached to the back and front parts of the machine. As long as the tappets, *x*, *x*, press upon the inclined planes, *y* & *z*, the locker bar will be kept raised as at *m*; but on the arm, *n*, moving outwards, the tappet passes through a notch or recess in the inclined plane, *z*, allowing the arm, *w*, to rise, and the locking bar to fall on to the ears of the bobbin carriages as seen at *l*. On the return of the arm, *n*, inwards, the smaller tappet, *x*, runs under the inclined plane, *z*, which rises upon its joint for the purpose of allowing the tappet to pass, at which time the larger tappet, *x*, coming upon the inclined plane, *y*, presses down the arm, *w*, and raises the bar as at *m*, which becomes confined in its elevated situation by the small tappet, *x*, until released by the next outward motion of the arm, *n*.

The patentee concludes his specification by saying, "Though I have described the construction of a pusher machine for making bobbin net lace, yet I wish it to be understood, that I do not claim all the parts of such a machine, even though several of those parts are new, as applied to a pusher machine, viz., the inverted positions of the bobbin carriage, as shewn in the drawing, moving upon single tier circular bolts, are a new contrivance and my invention, but have been used before the date of the above recited Letters Patent. I therefore confine my present claim, 1st, to the introduction and employment of two series of pushers on each side of the machine, attached to two distinct bars in the front of the machine, and two distinct bars in the back, which bars are plain straight bars, extending along the machine with the pusher leads attached thereto as usual, the sec tional form of these bars being shewn in fig. I; 2ndly, the introduction and employment of a single

bar for carrying a series of guides to be attached thereto in the ordinary way, in place of two bars as heretofore used for that purpose, which bar is likewise a plain straight bar, extending along the machine (the sectional form of which is shewn); and 3rdly, the introduction and employment of the two bars, which I have called locker or fetcher bars, and the mechanism for working them, which bars are also plain straight bars, extending along the machine, the sectional form of which is shewn; these bars may be attached in any convenient way to the other parts of the mechanism."

[*Inrolled, November*, 1825.]

To John Ridgway *and* William Ridgway, *both of Cauldon Place, in the Staffordshire Potteries, Manufacturers of China, Stone, and Earthenware, for an Improved Cock, Tap, or Valve for Drawing off Liquors.*

[Sealed, 1st November, 1825.]

The object of this invention is to produce a cock or tap for drawing liquor from barrels, which shall not be subject to corrosion by any chemical effect of the liquor in the barrel, upon the material of which the cock is made. The patentees, therefore, propose to construct their improved cock of earthenware, that is, of a composition of alumina, silex, quartz, cornish granite, or other earths, such as are commonly employed in the manufacture of porcelain stone ware, but the composition is not to be considered as forming any part of the patentees' claims.

The invention consists in a novel construction or form of the cock, and in the mode by which the parts are put together. Plate III. fig. 4, shews an external view of that particular form of cock which the patentees most approve. The pieces of which the cock is constituted are first moulded as other articles of pottery are usually formed, then turned in a lathe, or otherwise cut to their desired shapes: (viz.) the long tube, *a a*, is moulded and turned both within and without, having a spiral thread cut upon its external surface, for the purpose of enabling it to screw into the top hole of a barrel, and is also perforated with holes for the liquor to flow through; *b*, is the socket in which the plug acts; this socket is moulded and turned, and perforated through in the manner more particularly shewn in the longitudinal section of the complete cock, at fig. 5; *c* is a sort of rectilinear piece making up the square part of the cock, in which the bolt that retains the plug is inserted. These three pieces, when formed, as above said, in the clay, are to be cut and carefully fitted and joined together by some of the same material, softened with water; when this is done, the cock will assume the appearance of fig. 4; the joints of the pieces being represented by dots, for the sake of explanation, though not seen when the cock is complete.

The plug is represented in section at *d*, fig. 5, and perfect in fig. 6. This is made of the same composition as above described, and is moulded and turned to the form shewn, there being a groove or recess cut round three-fourths of its circumference, for the purpose of receiving the end of the bolt, which keeps it from being withdrawn from its socket; and the plug is also internally bored, in order to make a way for the liquor to flow through, as represented by dots in fig. 6, and in section in fig. 5.

The cock and its plug are now to be baked or burned

in a kiln, as other articles of porcelain usually are, and when that is done the plug and the socket of the cock are to be carefully ground, so as to make them fit accurately together, and be perfectly air-tight. The bolt, *e*, is now to be inserted into the square part of the cock, and screwed with a small screw or otherwise, as shewn in section, fig. 5, the end of the bolt passing into the groove, and thereby preventing the plug from being withdrawn from its socket. On turning the plug into the position shewn at fig. 5, its lateral orifice being opposite to the channel of the long tube, the liquor will flow through from the barrel, and be discharged at the bottom of the socket; but on turning the plug round, so that its aperture may be in another situation, the channel will be closed as at fig. 6, and the flow of the liquor from the barrel cease.

In cases where it may be desirable to secure the cock and prevent servants from drawing the liquor, it is proposed to adapt a lock to the bolt, as shewn at *f*, in fig. 6. This lock is inserted into the square part of the cock, in the same way as the bolt above described. There is a small square recess below the groove in the plug, *d*, into which, when the bolt of the lock shoots, the plug is prevented from turning round. This recess is so situated that the cock can only be locked and the key withdrawn, when the flow of the liquor is stopped and the plug cannot be turned again until the key is introduced and the bolt shut back.

The patentees lay no claim to the particular construction of lock employed for securing these improved cocks, but they claim as their invention, the form of the cock and its plug, and the manner of constructing the same as above described; they also claim the introduction of the bolt acting in a groove or recess in the plug, to confine or

lock the plug, as above said, or a catch, or pin, falling into a recess in the plug, all of which contrivances are contemplated by them, and are to be considered as variations of their invention.

The construction of these cocks is simple and their appearance rather elegant; they are not likely to break without very great force, being made of the hardest kind of porcelain, and having considerable substance; the material of which they are formed being vitrified in the furnace, they are perfectly impervious to the action of acids, and may be readily washed clean in case any deposition of matter from the liquor should adhere, while cocks made of brass or other metals, are acted upon by the acids in wine or fermented liquors, which frequently alter the flavour of the liquor and render it in some measure poisonous.

[*Inrolled, December*, 1825.]

To EDWARD JORDAN, *of the City of Norwich, Engineer, for his having Discovered a new mode of obtaining Power applicable to Machinery of different descriptions.*

[Sealed 18th June, 1824.]

The object of the inventor is to obtain a perpetual motion by the employment of a certain combination of machinery to be acted upon by the buoyant force of air vessels floating in cisterns of water. We have already noticed this invention in our preceding number, page 36, and now proceed to describe its construction and the

manner in which the mechanical power is proposed to be obtained.

Plate III. fig. 3, is a view of the apparatus, the sides of the water tanks being removed for the purpose of exhibiting the actions of the parts within; *a*, *a*, and *b*, *b*, are two cisterns or tanks filled with water; these are made fast together by a suitable framing of iron, *c*, *c*, upon which the standards are erected that support the vibrating beam, or lever *d*, *d*. At the ends of this beam there are attached, by pivot joints, the pendant frames, *e*, *e*, *z*, and *f*, *f*, *x*, which are guided in their ascent and descent by rollers, *y*, *y*, that run against the side of the tank; *g*, *g*, *g*, *g*, *g*, are five water tight barrels, or cylindrical vessels filled with air, which are wholly immersed below the surface of the water in the tank, *a*, *a*;—*h*, *h*, *h*, *h*, *h*, are five similar barrels immersed in the tank, *b*, *b*. Axles pass through these barrels, and at their extremities there are antifriction rollers, which are intended to guide the barrels along groves *i*, *i*, *i*, *i*, formed in the sides of the tanks.

In order to put the machinery first in action, let an adequate power be employed to depress the end of the beam or lever, *d* 1, the frame, *e z*, will descend with it, and by a finger or projecting piece at bottom of the long perpendicular bar, *e*, bearing upon the axle of the barrel, *g* 1, that barrel will be forced down the groove, *i*, to the bottom of the tank, where it will displace the barrel, *g* 2, and by pushing it along the bottom groove drive the barrel, *g* 3, into the rising part of the groove under the outer bar, *z*, of the frame, *e*, with a tendency to raise it and the end of the lever, *d* 1, in doing which it will also cause the opposite end of the lever, *d* 2, and the frame, *ff x*, to descend in the tank, *b b*. Now the barrel or air vessel, *h*, being under the finger of the long perpendicular bar of the frame, *f*, that barrel is to be forced

down the groove, *i*, by the upward pressure of the barrel, *g* 3, the power of which is said to be increased by acting against the end of the lever, *d* 1, lengthened by the extension of the frame, *e z*; hence the end of the lever, *d* 1, now rises with a surplus of power beyond what is necessary to depress the barrel or air vessel, *h* 1, at the shorter end of the lever.

In a similar way to that above described, the descending barrel, *h* 1, will have driven forward the barrels, *h* 2 and *h* 3, and the extreme bar, *x*, of the frame, *f*, called an elongation of the lever, *b* 2, being now acted upon by the upward pressure of the barrel, *h* 3, the end of the lever, *d* 2, will rise under similar circumstances to those before described, and with a surplus of power beyond that which is necessary to depress the barrel, *g* 5, in the tank, *a a*. From this arrangement it would appear (supposing the principles correct) that the machine, when once put in motion, must continue to go, and the surplus power said to be obtained is proposed to be communicated from the beam, *d*, through rods, *k* and *l*, to cranks upon the axles of the toothed wheels, *m* and *n*, and these taking into the spindle, *o*, upon the axle of the fly or regulating wheel, *p*, will give that surplus of power to the axle, which may be employed as a moving agent to actuate other machinery that may be connected to it.

There are some minor contrivances appended to this piece of mechanism, such as small levers, *g* and *r*, to prevent the barrels from retrograding, and to guide them to the exact point where they may come into action with the fingers or end of the frames, *e z* and *f x*, and something is said about the amount of friction to be overcome, and the capability of augmenting the effective power by enlarging the diameter and the length of the barrels: as, however, the principles on which the project is formed,

are all founded in error, it will be unnecessary to enlarge upon the details of the construction of the proposed machine.

[*Inrolled December*, 1825.]

The fallacy of this intended perpetual motion will, we presume, be immediately evident to all who are acquainted with mechanical science; as, however, we are extremely anxious to shew the utter impossibility of obtaining a perpetual motion by mechanical means, we shall in our next devote a page to the demonstration of the error into which a want of scientific knowledge has led the projector of this scheme. It is to be deplored that in this, as in many other similar attempts, very considerable ingenuity has been thrown away, which a little theoretic knowledge would have prevented.

EDITOR.

To GEORGE ATKINS, *late of Drury-Lane, in the Parish of St. Clement's Danes, but now of St. Pancras, in the County of Middlesex, Gentleman, and* HENRY MARRIOTT, *of Fleet-street, in the City of London, Furnishing Ironmonger, for certain Improvements on, and Additions to, Stoves or Grates.*

[Sealed 18th June, 1825.]

THE objects of these improvements are, first, to remedy smoky chimneys; and, secondly, to economise fuel, and regulate the heat evolved from the stoves or grates: which objects are effected; 1st, by introducing the fuel into a box or chamber behind the grate; 2nd, by a peculiar mode of packing, with charcoal or other imperfect conductor

of heats, the back part of the mantle-piece over the fire-place, the sides of the grate, and other vacant spaces; and, 3rd, by a particular form and disposition of the oven of a cooking range.

In Plate IV. these contrivances are shewn. Fig. 1, is a front view of a Register stove; fig. 2. is a section of the same; *a*, is the grate, *b*, is a box placed behind the grate to receive coal, which opens at *c*, either by a sliding semi-circular plate, by a flap or door on hinges, or by any other suitable contrivance, observing that the aperture should be closed as nearly air tight as possible. The coals placed in the box, *b*, are to be supplied to the grate as occasion shall require, by raking them from the bottom of the box through the aperture, *d*.

The intention is to prevent the smoke evolved from the fresh coals, from passing up the chimney, and by this mode of supplying the grate with fuel, the coal near the aperture becomes partly decomposed, and the smoke emitted passing through the red fire, becomes consumed, leaving nothing but the incombustible part, such as the ammoniacal and carbonic acid gases to ascend the chimney.

A similar contrivance, applied to what is denominated an air stove, is shewn in the front view, fig. 3, and the section of the same, fig. 4. A kitchen range is shewn, adapted with the same sort of coal box, in fig. 5, the front view, and fig. 6, the section. In this figure, the bottom of the coal box forms the upper surface of a boiler, *e*, in which water is made to boil, and steam is generated for the ordinary purposes of cooking as usual.

The other objects of the patentees, to economise fuel and regulate the heat evolved from stoves and grates,

for warming apartments, and for the various operations of cooking, are to be accomplished by the following arrangement:

"In lieu of the detached fender and the opening beneath the fire, in stoves of the ordinary construction, a basement or projection is to be attached to the front of any register or other stove, immediately beneath and in contact with the bottom of the fire bars. This basement may be made of any kind of metal plates, or of marble or other stone, or of any kind of cement or artificial stone, or baked clay, in combination with metal plates or bars. It may also be made of any figure, and of any dimensions, according to individual taste or fancy. The basement must be provided with a drawer or box to receive the ashes beneath the fire, in the front of which drawer should be a sliding ventilator, in order to admit a current of air beneath the fire-grating."

The economising of fuel and regulating the heat admitted, is proposed to be further effected by packing the sides of the stove and other parts with a substance, such as pulverised charcoal, which shall prevent the heat from passing off. The spaces marked *f*, below the grate, are to be so packed, and also the space marked *g*, behind the mantle piece, and all the cavities formed about the fire place.

The improvement, as respects the oven, consists in placing it as at *h*, in fig. 6, where the fire acts upon its underside. The oven is to be formed of wrought or cast iron, the under part being lined with fire-stone, or other such materials, as shewn by dots, to prevent the fire from acting too powerfully upon it, and also to render the heat more uniform within. The spaces, *i*, *i*, on each side, are intended for hot-closets, and the bottom

of these are designed to receive the usual culinary vessels for steaming or boiling.

The patentees say, that the peculiar advantages attending a kitchen stove, having the appendages before-mentioned, are, that the oven may be more uniformly and far more economically heated by a given quantity of fuel, than by any of the usual arrangements of flues leading from the sides of the fire, and the very simple construction of the draft passages and apertures, together with the combustion of the smoke, which in a great measure prevents the inconvenience that all other flues are liable to from the deposit of soot.

The specification concludes by stating, that the claims of inventors consist in the introduction of the coal box or fender: in packing the sides and other parts with the charcoal: and in the construction and application of the improved oven as above described.

[*Inrolled December*, 1825.]

To DAVID GORDON, *of Basinghall-street, in the City of London, Esq., for his Invention of certain Improvements in the Construction of Carriages, or other Machines, to be moved or propelled by Mechanical means.*

[Sealed 18th December, 1824.]

THIS invention is a modification of the old project for propelling by means of legs or poles, moved by cranks, and made to push against the ground in an oblique direction behind the carriage. Plate IV. fig. 7, is a diagram shewn by dots, of a carriage of the kind proposed by the

patentee, with the propelling machinery seen through the outline.

As respects the carriage itself it is to be divided into a number of compartments, of which *a*, *a*, is the space to contain the machinery; *b*, *b*, the part appropriated to luggage; *c*, *c*, that appropriated to the first class or inside passengers; *d*, *d*, the part for the second class or outside passengers, being intended to hold twelve; *e*, is the conductor's seat, where he is to direct the fore wheel, and thereby guide the carriage: he may also in this situation have a controul over the entire machine, by means of rods or cords, leading to the several parts. The whole is mounted upon springs, and runs upon three wheels, and is adapted either for railways or ordinary roads.

The machinery may be actuated by a steam engine, as a moving agent for working the legs, and the power is to be applied to the axle, *f*, which is a shaft having eight cranks, and to each of these cranks one of the legs, *g*, is to be attached. At the extremity of this shaft a toothed wheel is affixed, taking into another toothed wheel of similar diameter and number of teeth upon the end of the axle, *h*. This axle, *h*, carries a series of cam wheels, *i*, corresponding to the number and situations of the cranks, and above it are a similar number of levers, *k*, with a friction roller under each respectively acting against the peripheries of the cam wheels. To the ends of these levers, rods, *l*, are attached by joints, which rods are also respectively jointed to the feet, *m*, of the propellers, and cause them to rise and fall as the cranks go round.

The propellers or legs, *g*, are straight tubes of metal, with wooden rods within, and at their lower extremities are the feet, *m*, made of metal, and arched on the under side. These feet are to be shod with pieces of cork, or set with bristles like a hard brush, between iron teeth or

points: the intention of which is, that the feet may take firm hold of the ground, and not be liable to slip.

Rotatory power, as before said, being applied to the crank shaft, *f*, in the direction of the arrow, the propellers will in succession be brought into the situation of *g* 1, with the foot in contact with the ground, and as the crank shaft goes round, the foot will retain such firm hold, that the carriage will give way, and be propelled in an opposite direction. At this time the smaller diameter of the cam wheel, *i*, will receive the friction roller of the lever, *k* 1; but when the crank has proceeded sufficiently for to bring the propeller into the situation of *g* 2, then the lever will be raised as *k* 2, by its friction roller running upon the larger diameter of the cam wheel, *i*; hence the rod and its foot will be lifted off the ground, as *g* 2, and continue raised until the leg arrives again in the situation of *g* 1, and comes into operation.

In this manner a series of eight, or any other number of legs or propellers attached to cranks on a rotatory shaft, are made to drive a carriage forward, by bringing the feet successively in contact with the ground, which feet are proposed to be loaded with lead, in order to render them sufficiently heavy. The levers are guided by passing up and down in a curved frame, *o*, with long apertures, something like a gridiron.

If the carriage should be designed to travel upon a railroad, ribs of wood may be placed across the middle of the way, in ascending hills, for the feet to bear against; and to prevent the carriage from running down hill with too great velocity, breaks may also be adapted to the wheels, for the purpose of locking them, which should be under the command of the conductor.

This contrivance is also proposed to be employed for propelling ploughs, harrows, and other agricultural ma-

chines; but, in those cases, the feet of the propellers will require to be made larger in proportion as they have to travel over uneven or soft ground.

The patentee limits his claim of novelty to the following particulars: "first, the general arrangement of the machinery or apparatus for propelling by mechanical means carriages, ploughs, harrows, or other agricultural machines or implements, as hereinbefore described. Secondly, I claim the exclusive right of having the rods or propellers in such carriages or machines jointed to cranks, situate at different angles upon the same axis, so that the extremities or feet of the propellers will act upon the ground in succession, at a time when they are moving with the greatest velocity, or nearly so. Thirdly, I make claim to the form of the under surfaces of the feet, being described by a circle of about the same radius as the radius of the cranks which move them, in order that the said feet may accommodate themselves more easily to the ground, and especially in the act of turning. And, fourthly, I claim the right of employing bristles, whalebone, or other pliable material affixed to the under surface of the curved feet of the propellers, as a substance to come into contact with the ground, and hold it sufficiently thereupon."

[*Inrolled June,* 1825.]

To JOHN BLOOMFIELD, *of Islington, near Birmingham, in the County of Warwick, Engineer, and* JOSEPH LUCKCOCK, *of Edgbaston, near Birmingham, aforesaid, Gentleman, for their Invention of certain Improvements in*

the Machinery or Apparatus for Propelling Vessels, which Improvements are also applicable to other useful purposes.

[Sealed 20th April, 1825.]

THESE improvements consist in the construction of certain systems of wheels, by which rotatory paddles are to be actuated with greater effect than by any of the modes of propelling vessels on water, heretofore employed. The patentees say that it requires but little mechanical skill to appreciate the great waste of power in propelling a steam vessel by the ordinary paddle wheels. When the wheels are immersed axle deep in the water, the puddles on the fore part of the wheel are exerting their power in lifting the vessel out of the water, and by their violent action upon the surface of the water, shake and impede the progress of the vessel considerably, while the paddles in the after-part of the wheel are uselessly expending their force in lifting the water, and by the corresponding re-action of sinking the vessel. It is therefore to be understood, that a new mode of attaching paddles to wheels or other machinery, so as to obviate these objections, form the principal features of this invention.

Plate V. fig. 1, represents a large wheel, *a*, *a*, *a*, say of six feet diameter, revolving upon a fixed axle, *b*, and carrying a series of five paddles, *c*, *c*, *c*, *c*, *c*. These paddles turn upon their axles, and have a toothed wheel, *d*, of sixteen inches diameter, affixed to each. A stationary toothed wheel *e*, of one foot diameter, is made fast to the central axle, and a series of five intermediate toothed wheels, *f*, *f*, *f*, *f*, *f*, of similar dimensions, take into the teeth of the central stationary wheel. Upon the axles of

the intermediate wheels, *f*, are pinions, *g*, of eight inches diameter, which take into the teeth of the wheels *d*, and together form a train of wheels and pinions.

Now, if the large wheel, *a*, be made to revolve by the power of a steam engine or otherwise, the train will be actuated and the paddles go round with the carrier wheel; but the wheels, *d*, being twice the diameter of the pinions, *g*, the paddles will be made to perform only half a revolution upon their axles, during the time that the large carrier wheel, *a*, performs an entire revolution. Hence, supposing any one of the paddles balanced upon its axle to be in a perpendicular position at the lowest point of the carrier wheel's revolution, it will be in a horizontal position at top, and oblique in the other parts of its course, as shewn. By these means the extreme edge of the paddle will be made to describe a convolute curve, called the cardioid curve.

This construction of wheel is proposed as an effective propeller, for ships or smaller vessels, and may act entirely under water, for it will be seen that during the lower two-thirds of the revolution of the carrier wheel, the broad surface of the paddle will be in active resistance against the water, and during the upper one-third of the revolution the edge of the paddle will be presented to the water, and offer little or no resistance.

Any other number of paddles may be employed and put in action by a train of wheels, or by any other means, that shall enable them to turn half round upon their axles, during one revolution of the carrier wheel, and to revolve in the convolute curve described, which is the particular object to be obtained.

This principle may be further varied by constructing a series of traversing paddles which are attached to alternating bars, instead of the carrier wheels, but made to

revolve in the cardioid curve before mentioned. Fig. 2, is a vertical section of a vessel, with the system of paddles acting under its deck; and fig. 3, is a plan or horizontal view of the same, the respective letters referring to the same parts in both figures. This contrivance is particularly applicable to propelling boats and barges on canals or on shallow rivers.

a, *a*, are two toothed wheels, each having a crank upon its axle, which cranks carry the bars *b*, *b*, that support the double range of paddles, and each of the wheels, *a*, being actuated by a connection to a steam engine, causes the whole of the propelling apparatus to be put in action. These paddles are carried round in an elliptical course, and are made to turn upon their axle by wheels or pinions of dissimilar diameters in the same way to those above described, so as to present their broad surfaces in the act of propelling, and their edges when advancing forward through the water previously to giving the stroke. *c*, *c*, are perpendicular axles upon which the paddles *d*, *d*, turn, having at the upper ends bevelled toothed pinions *e*, *e*, taking into other bevelled toothed pinions affixed to the horizontal rods *f*, *f*. Upon the joints of the cranks there are pinions *g*, taking into pinions *h*, at the extremities of the horizontal rods *f*, *f*, by which means as the crank wheels, *a*, go round, giving the alternating motion to the paddles, the small wheels, *i*, cause the paddles to turn and perform half a revolution as they move through the water, presenting their broad surfaces as they advance in the act of propelling, and turning edgewise to the water when retrograding.

The second part of this invention, under the description of "improvements also applicable to other useful purposes," consists in a novel construction of rotatory steam engine, to be employed as the impelling power for driving

the paddles above described, or as a first mover applied to any other purpose. Fig. 14, is a section of such an engine, with a double steam way, having a series of five rotatory pistons attached to a rotatory wheel; *a, a, a,* is the outer case or fixed cylinder in which the pistons and the wheel revolve; *b, b, b,* is the rotatory wheel, and *c, c, c, c, c,* are the pistons; to the axles of these there are attached on the outside of the engine, a system of toothed wheels in gear, by means of which the pistons are made to preserve a parallel position in every part of their revolution, as they turn in the circular recesses formed in the wheel; *d* 1 and *d* 2, are the passages by which steam passes from a boiler into the engine. The pressure of the steam from *d* 1, exerting itself against the side of the piston, *c* 1, drives that and the wheel, *b*, round in the direction of the arrows, and at the same time the steam from *d* 2, exerting its force against the side of the piston, *c* 4, in a similar manner produces the rotatory action of the wheel. In the situations of the pistons, as shewn in the figure, the side of *c* 5, is working against the packed surface of the cylinder, at *a* 1, and the passage of steam is thereby prevented; at the same time the arm, *b* 3, of the wheel, is working against the opposite packed surface of the cylinder, *a* 3, which also is steam-tight, and as the wheel proceeds, the curved ends of the pistons in succession, work against the packed surfaces of the cylinder at *a* 2 and *a* 4.

The piston, *c* 1, having advanced in its rotation to the point marked *e*, the piston, *c* 5, will have arrived at the point marked *f*, when the steam will exert its force against the side of *c* 5, and *c* 1, and allow the volume of steam between them to escape through the passage, *g* 1, to the condensor or to the atmosphere. In the same way the steam will act upon all the pistons in succession,

driving them forward to a certain point, and then allowing the steam to pass off to the condensor or to the open air, while the following piston comes into action : and thus keep up the rotation of the wheel to which they are connected: and this rotatory action, being communicated by a central shaft to other machinery, gives the motive power.

Fig. 15 is another variation of the same principle applied to the construction of a rotatory steam engine, having only a single steam way, and the pistons moving in the cardioid curve described above; *a*, *a*, *a*, is the outer case or cylinder, in which the wheel, *b*, *b*, *b*, revolves, carrying the six (or any other number of pistons, *c*, *c*, *c*. Let it be supposed that steam is admitted from a boiler into the engine at the pipe, *d*, it will pass along the circular passage between the cylinder and the wheel, until it meets the piston, *c* 1, and there exerting its force, will drive the piston forward. The piston will begin to act as soon as it meets the packed part of the cylinder at *e*, and continue to act until it has passed the other end of the packing at *f*, by which time the next piston has arrived at *e*, and the steam begins to act upon it, while that steam which impelled the piston, *c* 1, forward, will escape along the circular passage and discharge itself at the pipe, *g*, into a condensor or the atmosphere.

These principles may be varied in several ways, but the patentees consider that sufficient is shewn to point out their intention, and that any competent mechanic will understand how to adapt their contrivances according to circumstances.

[*Inrolled October*, 1825.]

To JOSEPH GARDNER, *Smith, and* JOHN HERBERT, *Carpenter, both of Stanley St. Leonard's, in the County of Gloucester, for their Invention of certain Improvements on Machines for Shearing or Cropping Woollen Cloths.*

[Sealed 18th December, 1824.]

THESE improvements apply to such shearing machines as have a fixed ledger blade with a revolving cutter, and are calculated to crop or shear the pile of the cloth either lengthwise or from list to list. The objects of the patentees are arranged under three heads, 1st, to give a lateral or sliding motion to the cutting roller, at the same time that it is revolving, by which means the cutting blade moves against the ledger blade with better effect, and produces a sort of sliding or drawn cut; 2ndly, to support the middle part of the bed, so as to keep it evenly against the cutter; and 3rdly, a mode of conducting the cloth forward under the cutter.

These contrivances are shewn in Plate IV. figs. 8 and 9. Fig. 8 represents the cutting roller, *a, a,* which is placed across the machine and mounted upon an axle, turning in standards; four cutting blades are set in spiral curves, round the periphery of the roller, which is made to revolve rapidly by a band passed over the pulley, *b,* and actuated by a rigger on the side of the machine, but not shewn in this figure; *c, c,* is a long roller, which constitutes the bed or beam, over which the cloth passes. That part of the axle of the cutting roller which passes through the pulley, *b,* is made square, and slides freely through the pulley. At the end of the axle there is a

ball, fitted into a socket, *d*, constituting a joint upon which the roller turns, and the piece which forms the socket is attached to the crank, *e;* this crank is supported by a bent frame, *f*, affixed to the side of the standard, and has a bevelled pinion, *i*, at its lower end, taking into a bevelled toothed wheel, *g*, upon the back of the pulley, *b*.

When the pulley, *b*, revolves, the cutting roller revolves also, and the teeth of the wheel, *g*, turning the pinion, *i*, causes the crank to go round, and by means of the socket piece to slide the cutting roller to and fro, so as to produce the sliding action of the cutting blade against the ledger blade as above said. The diameter of the pinion, *i*, and toothed wheel, *g*, must be so proportioned to each other that each cutting blade shall continue sliding in one direction during the time that it is in contact with the ledger blade, and consequently if there are four cutting blades, the pinion, *i*, must be one fourth the size of the toothed wheel, *g*. If only three cutting blades are employed, or a less or greater number, their sizes must be varied accordingly.

The second part of the improvement applicable to shearing machines, viz. supporting the middle of the bed, consists in the introduction of a small roller, *k*, placed in bearings under the long roller or bed, *c*. This roller is to be situated as near the middle of the bed as possible, turning on pivots, and its bearing are in lateral pieces, *l*, *l*, which may be adjusted by screws so as to bring the roller in close contact with the under side of the bed. This contrivance may be varied by placing two rollers, but it is considered that one will be sufficient to keep the bed up to the cutter.

The third improvement applies to the mode of conducting the cloth under the cutters, and is shewn in the

side view of a complete shearing machine at fig. 9; *a, a,* is the frame work or standard that supports the whole of the machinery: *b, b,* is a square frame that carries the rollers *c, c,* and *d, d,* and also two similar rollers on the opposite side, not seen in the figure; this frame slides to and fro upon small anti-friction rollers, *e, e, e,* being drawn by cords attached to each end of the frame, which cords are coiled round a pulley, *f,* that slides loosely upon its axle.

The cloth to be shorn is rolled upon the lower roller, *d, d,* then carried up over the rollers, *c, c,* and made fast to the roller, *d,* on the opposite side, by which means it is stretched tight and smooth. Rotatory motion is to be given to the axle of the rigger, *g,* and a band from that rigger passes to a pulley, *h,* and another band from a rigger, *i,* upon the axle of *h,* to the pulley *k,* of the cutting roller (described at *b,* in fig. 8, and which in this figure is seen sideways upon a smaller scale); by these means the cutting roller is made to revolve with an accelerated velocity. Upon the axle of *g,* there is a small pulley from whence a band passes to a rigger upon the axle of *f,* and by means of a clutch or locking lever, *l,* the pulley, *f,* is made to turn with the axle and with a diminished velocity, at which time the cord coils upon the pulley and the carriage or frame, *b,* is slowly moved along, and the cloth thereby progressively drawn over the bed under the rotatory cutter.

When that position of the surface of the cloth which is intended to be submitted to the operation of cropping or cutting off the pile has passed completely under the cutter, the handle, *l,* is to be raised, which releases the pulley from its revolving axis, and the carriage stands still. This part of the operation must be attended to and directed by the workman, in order to prevent the list upon the edge of the cloth from being cut.

The cutting roller being now lifted up, the frame, *b*, *b*, is drawn back by hand, and by turning the winch, *m*, another portion of the cloth may be brought under operation; and so on, shifting the cloth from time to time. This particular construction of the machine is designed to shear the cloth crosswise, that is, from list to list, but by merely altering the position of the rollers, *c*, *d*, the cloth might be shorn lengthwise.

[*Inrolled February*, 1825.]

To Philip Brooks, *of Shelton, in the Potteries, Staffordshire, Engraver, for his Invention of, and Improvement in, a certain Composition, and the application thereof to the making of Dies, Moulds, and Matrices, and various other Articles.*

[Sealed 21st June, 1825.]

This invention appears to be the manufacture of china or earthenware stamps, or moulds, for embossing paper, and moulding a variety of other articles; and also for making from the same sort of materials tablets, chimney pieces, and architectural devices. The novelty of this invention, in all its bearings, is not exactly obvious to us, nor is the practibility of employing such fragile materials for all the purposes stated in the specification evident; we, however, give the substance of the invention nearly in the words of the patentee.

The improvement, he says, applies to the making of

dies, moulds, matrices, or stamps, of a certain combination of siliceous, argillaceous, calcareous, vitrescent, and barytic earths, or other natural earthy compounds, such as granite, felspar, clays, marles, flints, chalk, stone, or any other materials used by potters. We do not, however, find the proportion, or the manner in which these substances, or any of them, are to be combined.

These dies, moulds, &c.; made of the above earthy materials, are to be vitrified by heat, as pottery ware is usually treated, and may then be employed as stamps for embossing figures, or other ornamental devices, upon paper, card, or Bristol board. The same stamps or moulds may also, it is said, be used for producing ornamental subjects in leather, horn, pasteboard, bone, tortoise-shell, ivory, wax, and a great variety of compositions, the mode of employing them for these purposes, we presume, is to be considered as well understood.

The second object of the inventor is, to make from the said earthy materials tabular plates, with smooth surfaces, resembling tiles or slates, which are to be produced by pressing the composition, (whether into moulds or otherwise is not said), by means of an hydraulic press; these plates are then to undergo the same process of vitrification by heat, and may be afterwards used for the purposes of drawing, writing, printing, and painting upon, with black lead, chalk, crayons, water or oil colours, or any other suitable materials.

The same contrivances are applicable to the production of slabs or tiles with smooth surfaces, either vitreous or absorbent, and which slabs may, if required, have enamelled surfaces, for the purposes of painting, enamelling, gilding, &c.

By similar means, devices are also to be made either

with or without glazed coatings for chimney-pieces, and all other descriptions of architectural or ornamental purposes, to which the same may be applicable.

[*Inrolled December*, 1825.]

To EDWARD ELLISS, *of Crexton, near Rochester, in the County of Kent, Lime Merchant, for his Invention of an Improved Brick, or substitute for Brick, manufactured from a Material hitherto unused for or in the making of Bricks.*

[Sealed 14th May, 1825.]

THE patentee says, "there is a certain stone or chalk, (of which there are very extensive quarries in the county of Kent, and elsewhere in England) commonly called and known by the name of grey stone chalk, hitherto principally used for the manufacture of lime, but which grey stone chalk I use and apply as a building material, in substitution for bricks, by converting it into similar dimensions by means of saws, and which may be done by other edge tools."

This is the whole of the specification, and we leave our readers to discover the novelty of cutting stone into such suitable forms as shall be eligible for building.

[*Inrolled November*, 1825.]

To James Falconer Atlie, *of Marshwood, in the county of Southampton, Gentleman, for his new invented process, by which Planks and other Scantlins of Wood, of every description, will be prevented from shrinking, and will be altered and materially improved in their durability, closeness of grain, and power of resisting moisture, so as to render the same better adapted for Ship building and other building purposes; for the construction of Furniture and other purposes, where close or compact wood is desirable, in so much that the wood so prepared will become a new article of commerce and manufacture, which he intends calling* CONDENSED WOOD.

[Sealed 11th January, 1825.]

The patentee proposes to cut the timber which he is about to operate upon, into planks or rectilinear pieces, that is, to form them with parallel surfaces or uniform thicknesses throughout the length of the plank or piece. These pieces are to be passed between parallel iron or steel rollers, with highly polished surfaces, so as to press the wood in the same manner that metal is operated upon in flatting mills. The proper width, or distance of the rollers apart, will of course depend upon the thickness of the piece of wood, and the pressure thus given must be gradual, beginning with a small force, and increasing it slowly. For if the pressure is brought suddenly upon the plank or other piece, it will endanger the fibres, and split or crush the wood, and render it weaker, instead of improving its strength and solidity.

The best method of effecting this object is by placing several pairs of rollers behind each other, the distance be-

tween each pair progressively diminishing, when on passing the plank or other piece of timber between these rollers, the sap or other moisture will be forced out of the pores of the wood at the ends and sides of the plank, and it will be gradually compressed and rendered more solid, without disturbing the grain. In this way wood may be rendered much stronger, heavier, and harder than in its natural state, and less pervious to moisture, which tends considerably to preserve it from decay, and renders it greatly to be preferred for ship-building, and for the purposes of building generally.

Wood compressed in this manner is particularly recommended for furniture, as it is less liable to scratch, and could not shrink. The precise quantity of pressure required cannot be stated, as that will depend on the kind of wood operated upon. Oak and mahogany will admit of much more compression than fir or other slight woods, and by these means common Honduras may be rendered as hard and heavy as the best Spanish, and will not be susceptible of much change under great variations of temperature and moisture. The degree of pressure can therefore only be learned by experience.

In ship building it is of importance to obtain the wooden bolts called trenails and dowells of the most compact quality, and such as will not shrink; it is therefore proposed to make such things out of planks compressed in the manner above described, by cutting them into square rods, and afterwards rounding the rods by planing or otherwise; these rods are proposed to be then passed through round holes of a taper form made in steel plates, in the manner of wire-drawing, but the wood should be forced through the holes, instead of being drawn through.

The patentee states, that the main object of the invention is, to produce an improvement in the quality of

wood, where durability and hardness are objects to be obtained; for by this process, the softest Honduras mahogany may be made equal in weight, hardness, durability, and quality, to the finest Spanish wood; and if one of the rollers is sufficiently bright, a finished polish will be left upon the surface, and so of almost all the several varieties of wood, which will be more or less improved in quality by the aforesaid mode of treatment.

[*Inrolled July,* 1825.]

To CHARLES OGILVY, *of Verulam Buildings, Gray's Inn, in the County of Middlesex, Esq., for his Invention of an Improved Apparatus for Storing Gas.*

[Sealed 20th April, 1825.]

The patentee having observed that charcoal possesses the property of absorbing gas under pressure, and of giving it out again when the pressure is removed, proposes to avail himself of that property, by employing charcoal in vessels where any sort of gas is designed to be stored in a compressed state; as for instance, (we presume) in portable gas lamps, and also in a diving apparatus of the kind described under James's patent, page 1, of the present vol.

The form of the vessel in which the gas is to be stored, constitutes no part of the patentee's claim; he proposes, however, to employ a spherical vessel made of metal. The two hemispheres of which this vessel is to be formed, are, previously to being united together, filled with charcoal, either in solid hemispherical blocks or pieces stowed

as closely together as possible, so that when the two parts of the vessel are put together and perfectly united, it may be completely filled with charcoal.

To one of these hemispheres a tube with a stop-cock must be attached, and in order to charge the spherical vessel with gas, the tube is to be affixed by screwing or otherwise to a reservoir, containing compressed gas. The stop-cock being opened, the gas is to be allowed to pass up the tube into the spherical vessel, when the charcoal within will absorb the gas, and retain it until liberated by taking off the pressure.

The patentee does not confine his invention to the storing of inflammable gas, but includes "atmospherical air, oxygen, hydrogen, carbonic oxide, carbonic acid gas, and the mixed as well as pure inflammable gas or gases known as applicable to various purposes of illumination."

The charcoal should be well burnt, and the heaviest is to be preferred; that which has been made from gummy or resinous woods will not answer so well; it should also be perfectly dry, and the gas be divested of moisture as much as possible, and rendered free from all matters that might be held in solution, which are liable to liquid condension under such pressure as may be employed in the operation of storing. It is however to be observed, that carbonic acid gas, under high pressure, becomes a liquid, which liquid the charcoal will absorb and evolve again in the form of gas when the pressure is taken off by opening the stop-cock.

The operation of storing gas in these vessels is not to be performed by a forcing pump, or other compressing engine, as the heat by those means given out would diminish the absorbent properties of the charcoal; it is therefore directed that the gas should be compressed in a

distinct vessel, and allowed to remain to cool before it is admitted to the storing vessel.

An air pump should be attached to the tube of the storing vessel, previously to charging it with gas, for the purpose of withdrawing any air that might be contained within, except when the object is to store atmospheric air; and if a liquid condensation of vapour has been previously formed in the vessel, it should be placed in an oven with the stop-cock open, and heated to a temperature of 300° or 350° Fahr. in order to drive off all the gas from the charcoal. This vapour should be driven off by means of a tube, one end of which is to be inserted into the oven, and the other placed in an open vessel under mercury, as it is absolutely necessary that the oven should have no opening by which atmospheric air could be admitted, as that would injure the charcoal.

The patentee states, that he does not claim any particular form of vessel or quantity of charcoal to be employed, though the more charcoal that can be placed in the vessel, the greater will be the effect; but "I claim," says he, "as my invention, an apparatus, consisting of a vessel filled with charcoal, with an air stop-cock, as herein before described, for the purpose of storing such gas or gases, as are commonly called and known as atmospheric air, oxygen, nitrogen, hydrogen, carbonic oxide, carbonic acid gas, and the inflammable gas and gases, mixed as well as pure, known as applicable to various purposes of illumination."

[*Inrolled October,* 1825.]

To JOHN LINDSAY, *of the Island of Henue, near Guernsey, Esq. for his Invention of certain Improvements in the Construction of Horse and Carriage Ways of Streets, Turnpike, and other Roads, and an Improvement or Addition to Wheels to be used thereon.*

[Sealed 14th June, 1825.]

THE patentee considers that the public are fully sensible of the advantages of employing broken stones for making roads, commonly called Macadamizing; his improvement is intended to be in some measure combined with this system, and consists principally in laying ranges of paving or parallel lines of granite curb along the roads, for the wheels of the carriages to run upon; considering that the weight and action of the carriage wheels is the principal cause of the road-way getting out of repair.

Plate V. fig. 6, is a cross section of a street, prepared agreeable to the plan of the patentee; *a, a*, is the foundation for the paving, made of firm compact earth, or well rammed materials; *b*, and *c, c*, are slabs or blocks of smooth granite, placed in parallel ranges along the street, for the wheels of carriages to run upon; *d, d*, are also stone blocks, with recesses or trenches cut in their upper surfaces, as kennels or gutters for the rain or other water to drain off into. The intermediate spaces, *e, e, e, e*, are filled up by stones of the same form as those commonly employed for pitching or paving the streets, but they are proposed to be placed with their broadest surfaces downwards, and after being well rammed, the wedge formed interstices between them are to be filled up with broken

pieces of granite or other hard materials, or grouted with cement. The central line of granite blocks, *b*, are to be sufficiently broad to allow two carriages to pass; and the side blocks, *c*, *c*, are only required to be wide enough for one wheel to run along. Upon the curbs, carriages with heavy loads will pass with ease, and comparatively little labour to the horse or horses.

The mode of constructing a turnpike road is shewn in the section, fig. 7; where the foundation is proposed to be first pitched or covered with stones, as at *a*, *a*, their broadest parts being placed downwards, and the interstices filled with small broken granite, as before described, and rammed perfectly tight. Upon this, as a foundation, two lines of granite blocks are to be placed as *b*, *b*, for the wheel tracks of the ordinary carriages, and on the sides, two other lines of stone, as *c*, *c*; which last, being narrow, are to be held together by cramps made by rods, or bars of iron, laid on their upper surfaces, and turned downwards at the end into mortice holes cut in the solid stones, where they are made fast by pouring in melted lead. The spaces of the road between the lines of the blocks, are to be filled up with broken pieces of stone, as in the ordinary mode of Macadamizing, which is for the horses' feet to run upon, and may be made something higher than the wheel tracks.

The iron bar that extends along the side lines of the curb, is proposed to be formed in its sectional figure like an equilateral triangle, and may be employed as a railroad for tram waggons, the wheels on one side only being formed to suit the figure of the rail, as at *d*, the other wheels having a plain tire, and running upon the stone track. If this rail-way should be required for the passage of locomotive carriages, a bar with a rack may be em-

ployed, and one of the wheels made with teeth on its periphery, as *e*; the wheels on the other side being plain, and running upon the stone track. One particular feature proposed by the patentee, is, to bring down the flanges of this toothed wheel, so as to bear upon the stone curb, and thereby to take off a great portion of the friction of the toothed wheel upon the racks, which will tend greatly to protect it from injury.

[*Inrolled, December*, 1825.]

It does not appear that the modes proposed by the patentee have much novelty; indeed a part of this plan is already the subject of a patent, see Chambers's Specification, vol. x. page 5.

EDITOR.

To JACOB JEDDREY FISHER, *of Ealing, in the County of Middlesex, Esq., for his New Invented Application of Rail-ways, and other Machinery to be employed thereon.*

[Sealed 2nd April, 1825.]

THE intention of the patentee is to construct rail-ways by throwing chains from any two points, as over a river or ravine, or across a swampy ground, and to suspend from the catenarian curve of the chain, by means of prependicular rods, a straight rail upon the lower side ledges of which the wheels of the carriages are to run.

Plate V. fig. 8, is a side view of the proposed rail, *a*, *a*, and fig. 9 its edge or sectional appearance, which may be made of wood and suspended by rods attached to a chain

above, and by hooks or bolts at the lower end of these rods, made fast to the eyes on the top edge of the rail. At the under edge of the rail a flat piece, *b, b*, is affixed by bolts, upon which the wheels of the carriages are to run.

The carriage consists of two side bars, *c, c*, connecting the running wheels, *d, d*, and the two crank-formed frames, *e, e*, which pass under the flat piece or wheelway. To the rings at the lower part of the frames, *e*, the box or other vessel is to be attached by hanging arms, which is to convey the goods or passengers over the river or ravine.

The patentee does not confine himself to the employment of rail-ways made by suspended chains, but proposes to construct them by means of bars of iron, scaffolding poles, or rods supported upon standards, and by attachments to the beams or rafters of a building. In this way goods may be conveniently removed from place to place, and the patentee considers that the plan is particularly suited to his majesty's yards and store-houses.

A variation in the construction of the rail upon which the carriage wheels are to run is proposed, as at fig. 10, where the wheels are made to pass along a hollow trunk, attached to the under side of the extended chain, rod, pole, or beam, and the box or other vessel to contain the goods, is to be suspended below by a rod extending through a long slit or opening in the under side of the trunk.

[*Inrolled October*, 1825.]

This last contrivance is exactly the same as that described in Snowden's specification of a new invented wheelway; see our Xth vol., page 340, and plate XVI, fig. 4.

EDITOR.

Novel Inventions.

Improved Gun-lock-stop.

Mr. Westly Richards, of Birmingham, has invented a very simple and safe bolt, for the purpose of preventing a gun from being discharged accidentally. It consists of a small sliding piece or bolt attached to a scroll at the back part of the guard, which piece locks into a notch in the hinder part of the trigger, and prevents the trigger from being drawn back, consequently confining the sear and other internal parts of the lock, and thereby precluding the possibility of the piece being discharged until the bolt is withdrawn, which is only to be done by the little finger or side of the right hand, when the piece is presented from the shoulder.

This contrivance is shewn in Plate IV. at fig. 10. The construction of the gun lock is the same as others upon the percussion principle; *a* is the scroll behind the guard, which, instead of being a continuation of the guard, as usual, is made in a distinct piece, and attached to the gun by two small buttons that pass through mortice holes in the guard plate; *b* is the bolt, extending from and forming part of the scroll piece; *c* is the hinder part of the trigger, which has the notch that the bolt, *b*, passes into. The piece being cocked and brought to the shoulder to be discharged, the little finger of the right-hand pushes the scroll back and unlocks the trigger, when the piece may be let off as usual.

Polytechnic and Scientific Intelligence.

ROYAL SOCIETY.

THE sittings of the Royal Society were resumed for the season on Thursday, the 17th of November, at which meeting a paper was communicated by Dr. Davy, entitled, *Observations on the Changes which have taken place in some ancient alloys of Copper.*

The author first describes the nature of an incrustation upon an ancient helmet, found in a shallow part of the sea between the citadel of Corfu and the village of Castrades; the surface was of a variegated colour, mottled with spots of green, dirty white, and red: the red and green patches exhibited minute crystals of red oxide of copper and metallic copper, and were further composed of its green submuriate and carbonate; the dirty white parts consisted chiefly of oxide of tin.

These new combinations are only superficially produced: the metal was found bright beneath, and consisted of copper alloyed with 18.5 per cent. of tin.

An ancient nail from a tomb in Ithaca, and a mirror from a tomb at Samos, in Cephalonia, afforded nearly similar, but less distinctly, crystalline results. The copper in the mirror was alloyed with 6 per cent. of tin, and a minute portion of arsenic.

The examination of the incrustation upon ancient

coins, consisted of oxide of tin, and of carbonate, and submuriate of copper; it, in some cases, acquires a dingy hue, from the prevalence of black oxide of copper, mixed with a little of its protoxide.

The author could discover no connexion between the perfect state of preservation of ancient coins, and their composition; but he observes, that the manner in which the crystalline structure of the incrustation is acquired, is a peculiarly interesting question. There being no reason to suspect deposition from solution, "are we not," says the author, "under the necessity of inferring, that the mineralizing process witnessed in its effects depends on a slow motion and separation of the particles of the original compound; and must we not conclude that this motion is connected with the operation of attractions of different kinds, as chemical affinity, electro-chemical attraction, and attraction of aggregation?" If this conclusion be just, the author remarks, that it opens a new field of inquiry, which may help to explain several phenomena in mineralogy and geology.

At the same meeting a paper was also read, entitled, *Observations of the Apparent Distance and Positions of 460 double and triple Stars, made in the years 1823, 1824, 1825, together with a re-examination of 36 Stars of the same description, the distances and positions of which were communicated in a former Memoir, by* James South, F.R.S.

The author prefaces these observations with a brief account of the instruments with which, and the circumstances under which, they were made. The former being the same with which the observations previously communicated to this society were made, and being fully described in the former paper alluded to in the title of this, require no further particular description; he contents

himself therefore with noticing, that by a different adaptation of their parts, higher magnifying powers than those formerly employed were obtained, and a series of powers from 92 to 787 used in a part of the observations.

A large portion of these observations were made at Passy, near Paris; and the author takes occasion to make honourable mention of the facilities afforded him on the part of the French government, for the ingress and regress of his instruments into and out of France, and of the attention and assistance uniformly afforded him while resident there by many distinguished individuals.

Of the stars whose measures are here presented, he states that about 160 are hitherto undescribed, and probably new. The places of these are given merely with sufficient exactness to enable any one to find them in future. The remainder are in great measure stars comprised in M. Struve's catalogue of 796 double and triple stars, and among these about 160 belong to those examined for the first time by Sir Wm. Herschel.

The observations themselves are stated in a manner somewhat different from that adhered to in the former communication already alluded to. Instead of giving all the individual micrometrical measurements on which they depend, (about 14,000 in number,) which would have swelled the paper to an enormous bulk, only the mean results of each set of measures are given; but to afford every opportunity of forming an impartial judgment of their validity, not only the number of measures on which it depends is annexed to each mean result as stated, but also the difference between the greatest and least measure taken, or the limits within which all the measures necessarily lie.

The stars themselves are arranged in order of right as-

cension for convenience of reference. After the statement of the mean results of the several sets of observations both of angle and distance, a final mean, with a mean date for an epoch, is deduced. In the case of Sir Wm. Herschel's stars, a comparison of the measures now obtained with those given in his catalogues, or now for the first time brought to light by a careful examination of his manuscripts, is subjoined. By this comparison several fresh instances have been found of double stars, in which the relative motion of the individuals composing them is satisfactorily proved. In one remarkable case, (that of star δ Equulei,) this change has gone to an enormous extent, and is satisfactorily referred to proper motion in the large star. In another, not less singular, all the three stars of a triple star (ζ Cancri) are ascertained to be relatively in motion, describing orbits about each other, and forming probably a ternary system connected by the mutual gravitation of its members; thus completely justifying the views taken by Sir Wm. Herschel of this subject in his papers published in the transactions of this society in 1802 and 1804.

Annexed, as an appendix to these observations, is a re-examination of about 36 stars, measured in the former paper already alluded to, and which were considered as presenting peculiar interest from the evidence then obtained of their relative motion, and of their connection in binary systems. The results of this re-examination are in the highest degree satisfactory, as, with only two or three exceptions, these stars have been found to continue their motions in the directions, and in the greater number of cases, with nearly the velocities predicted. In the most remarkable case, that of the double star ξ Ursæ majoris, an angle of nearly 14° has thus been described by the two

stars about their common centre of gravity, in an interval of less than two years: thus affording every probability that in a very few years we shall arrive at a perfect knowledge of the figure, elements, and position of their orbits, and be enabled by strict calculation, to answer the important question, whether the Newtonian law of attraction is confined to our own system, or obtains also in the sidereal heavens.

(*To be continued.*)

French Patents.

Granted 1825, (*continued from Vol. X. Page* 221.)

To Pierre Aurore Frichat, Rue de Gravillier's, Paris for his invention of cutting fancy articles out of horn, ivory, and white or coloured skins—8th July—5 years.

To Jean Cristophe Gotten, Place des Victoires, Paris, for improvements and additions to a patent which he and the Sieur Duverger had taken on the 29th September, 1821, for 15 years, for an hydraulic lamp.

To George Watt, of London, represented at Paris by the Sieur Cooper, Boulevart des Italiens, for a new mode of corking bottles—8th July—10 years.

To Louis Jean Touchard, rue St. Anne, Paris, for improvements and additions to a patent which he obtained 19th May, 1825, for 15 years, for portable cold baths.

To Maxime Anne Chardron, d'Autrecourte (Ardennes) for improvements and additions to a patent obtained Sept. 9, 1824, for 15 years, for machines for pressing and washing cloths and other stuffs—8th July.

To Benjamin Rotch, of London, represented at Paris by the Sieur Perpigna, rue du Marchè St. Honoré, for a process for pressing cloths by the use of steam—8th July—10 years.

To John Masterman, of London, represented at Paris, by the Sieur Cooper Boulevart des Italiens, for an apparatus adapted for expeditious bottling of liquors—8th July—10 years.

To Francois Leblanc, Paroissien of Tours, for improvements and additions to a patent obtained 3rd June, 1823, for 10 years, for materials for making china, earthenware, &c., and for the preparation of earth for these uses—8th July.

To Aaron Manby and Daniel Wilson, at Charenton, near Paris, for a mode of plaiting bars of iron in a convenient form for making rail-ways—8th July—15 years.

To Henry Coke of London, represented at Paris by the Sieur Paxton, rue de Valeis, for a means of giving motion to water wheels—15th July—10 years.

To John Martin Hanchett, Henry William Smith, and Alexander Gordon, represented by the Sieur Rocher, rue Camartin, for a means of putting carriages of all kinds in motion by steam engines, or other moving power—15th July—15 years.

To Augustin Coront, of Lyons, for a loom for weaving silk, cotton, woollen, &c.—15th July—10 years.

To Henry Pauwells, of Lyons, for an apparatus for lighting by means of compressed gas—15th July—10 years.

To Jean Kettenhoven, rue Camartin, Paris, for sandals made entirely of metal—22nd July—10 years.

To Joseph Francois Manceaux, rue Le Noir, St. Honoré, for a process for making scabbards for polished arms—22 July—10 years.

To Count Lagarde Messence, and William Panter of London, represented at Paris by Le Compte d'Espienhall, rue de Choiseul for anti-attrition boxes and roller—22nd July—10 years.

To Thomas Guppy, of London, represented at Paris by Le Sieur Riviere, rue Riviere rue du Port Mahon, for a new method of using spars to replace masts of vessels—22nd July—10 years.

To Jean Baptiste Fournier, rue Popincourt, Paris, for an apparatus for ourdir (warping) et parer (cutting off the threads) and composed for the warp of the Tissus, applicable to looms for other stuffs—22nd July—10 years.

To Jacques Francois Mazeline, of Carcassonne, for a loom for weaving cloth and other stuffs—22nd July—10 years.

To John Price, rue St. Honoré, Paris, for a process for preparing wool for carding, without the use of oil or other unctuous substance—22nd July—10 years.

To the Rev. William Powell, of Raglan, England, represented at Paris by M. Albert, rue Nueve St. Augustin, for a blowing machine—22nd July—15 years.

To Capt. Delisle, of Dunkirk, for a steam boat for the navigation of rivers and canals, by the employment of two *eperviers* acting alternately on each side of the boat—22nd July -15 years.

To Jean Baptist Benjamin Laignel rue Chanoinesse, Paris, for a method of navigating the most rapid streams or rivers.—22d July—15 years.

To Gabriel Francois Bardel, passage des petits peres, Paris, for a process for making steel—22d July--15 years.

To Charles Louis Regnaduin, for a new kind of spectacles in which the branches de rallonge (lengthened) arc à pompe—22d July—5 years.

To Jean Charlos Debitte Jeune, for a species of wax candles, called batarde transparente—22d July—5 years.

To Antoine Salvy Sudre of Pazenas, for a distilling apparatus—22d July—5 years.

To Jean Pierre Lassere rue de Montmorence, Paris, for a box suited to contain the tinder for instantaneous light obtained by a piston—22d July—5 years.

To Jean Marie Farina rue St. Honoré, Paris, for a water for the toilette, called holy alliance water—22d July—5 years.

To Francois Rancurel, of Roquevaire for a process relative to the construction of improved steelyards—22d July—5 years.

To Fulerond Gerard of Lodève, for a machine for accelerating and improving the bobbinage of the frame in wool and cotton—22d July—10 years.

To Charles Toussaint Bantain, rue Simon le franc, Paris, for a new mode of fixing with precision the point of view of achromatic telescopes—28th July—5 years.

To John Marten Hanchett, rue Caumartin, Paris, for retorts for making coal gas, and to purify it by a mixture of atmospheric air—22d July—15 years.

To the Widow Susse, rue St. Anne, Paris, for cylendering, goffering and stamping skins and leather of all kinds with different designs—22d July—10 years.

To Jean Francois Auguste Saintmanand, of Thuit Signol, for a window contrived to prevent the water from penetrating into apartments—22d July—5 years.

To Jacques Antoine Courtois, rue des Deux-Portes, Saint Saureur, Paris, for an apparatus applicable to the covering of hats—4th August—15 years.

To Joseph Bazin, rue St. Jaques, Paris, for a machine to simplify inland navigation—4th August—10 years.

To Auguste de Boussard, Toulouse, for a new means of adapting the *sonnerie* of pendulums, a new quadrature which permits the needle to be turned every way.—4th August—15 years.

To Jean Nicholas Richard Lyons, for a steam engine which is called " tambour rotatif et á force constante—4th August—5 years.

To Joseph Louis, Gay Lussac, and Michael Eugene Cherreub, both of Paris, for a means of employing for lighting the acids *stéurique* and *margarique*, which are obtained by the *saponification* of grease, tallow, butter and oils—4th August—15 years.

To Jean Marie Emile Buffet, rue du Faubourg Poissonnieê, for a printing machine called " presse Jumelle."—4th August—5 years.

To Jean Baptiste Charreyre, rue Neuve St. Eustache, Paris, for a piano called " piano duoclavi"—4th Augt. 15 years.

To Guillaume Julierac and Joseph Francois Meyer, both of Paris, for a wooden shoe—4 Augt.—5 years.

To Le Sieur Veyrasset and Co. rue du Temple, Paris, for metal springs destined for the confection of bracelets, girdles, sword belts, and elastic garters—11 August, 10 years.

To Le Sieur Cocqueau, of Donai, for a double composition to destroy the fetid smell proceeding from wounds and divers functions of the animal economy —11 August, 5 years.

To Jean-Baptiste Denizot, of St. Antoine, for a machine to improve the drawing of silk—11 August, 10 years.

New Patents Sealed, 1825.

To John Mc. Curdy, of Cecil-street, Strand, in the county of Middlesex, Esq. for his invention of certain improvements in generating steam—Sealed 27th December —6 months.

To James Ogston and James Thomas Bell, of Davies-street, Berkeley-square, in the county of Middlesex, watchmakers, in consequence of a communication made to them by a certain foreigner residing abroad, for certain improvements in the construction or manufacture of watches of different descriptions—6th January—2 months.

To Richard Evans, of Bread-street, and Queen's-street, Cheapside, coffee merchant, for his invention of certain improvements in the apparatus for and process of distillation—7th January—6 months.

To Henry Houldsworth, the younger, of Manchester, in the county of Lancaster, cotton spinner, for his invention of certain improvements in machinery for giving the taking up or winding on motion to spools or bobbins and tubes, or other instruments, on which the roving or thread is wound, in roving, spinning, and twisting machines—16th January—6 months.

To Benjamin Newmarch, of Cheltenham, in the county of Glocester, Esq. for his invention of an improved method of exploding fire arms—16th January—6 months.

To John Rothwell, of Manchester, in the county of Lancaster, tape manufacturer, for his invention of an improved heald or harness for weaving purposes—16th January—2 months

Henry Anthony Keymans, of Warnford Court, Throgmorton Street, in the city of London, merchant, in consequence of communications made to him by a foreigner residing abroad, for certain improvements in the construction and use of apparatus and works for inland navigation—16th January—6 months.

To John Frederick Smith, of Dunston Hall, Chesterfield, in the county of Derby, Esq. for his invention of improvements in the process of drawing, roving, spin-

ning, and doubling wool, cotton, and other fibrous substances—19th January—6 months.

To William Whitfield, of Birmingham, for his invention of certain improvements in making or manufacturing of handles for saucepans, kettles, and other culinary vessels, and also tea kettle handles, straps, and other articles—19th January—6 months.

To Benjamin Cook, of Birmingham, in the county of Warwick, brass founder, for his invention of certain improvements in making or constructing hinges of various descriptions—19th January—6 months.

To Abraham Robert Lorent, of Gottenburgh, in the kingdom of Sweden, merchant, at present residing in King's-street, Cheapside, in the city of London, for his invention of a method of applying steam without pressure to pans, boilers, coppers, stills, pipes, and machinery, in order to produce, transmit, and regulate various temperatures of heat in the several processes of boiling, distilling, evaporating, inspissating, drying and warming, and also to produce power—19th January—6 months.

To Sir Robert Seppings, knight, a commissioner and surveyor of our navy, of Somerset House, in the county of Middlesex, for his invention of an improved construction of such masts and bowsprits as are generally known by the name of made masts, and made bowsprits—19th January—2 months.

To Robert Stephenson, of Bridge Town, in the parish of Old Stratford, in the county of Warwick, engineer, for his invention of axletrees to remedy the extra friction on curves to waggons, carts, cars, and carriages used or to be used on rail roads, tram-ways, and other public roads—23rd January—6 months.

D.	H.	M.	S.	
2	16	0	0	☿ in conj. with ♅ long. 21° in Cap. ☿ lat. 32′ S. ♅ lat. 27′ S. diff. lat. 5′
2	23	0	0	☾ in conj. with 1 μ in Sag.
3	0	0	0	☾ in conj. with 2 μ in Sag.
3	13	20	7	♃'s 1st Sat. will immerge.
4	2	0	0	☾ in conj. with α in Sagit.
5	6	0	0	☾ in conj. with β in Cap.
6	12	22	0	Ecliptic Conjunction or ● New Moon.
7	10	0	0	♀ in conj. with δ in Cap.
10	15	13	41	♃'s 1st Sat. will immerge.
12	9	42	5	♃'s 1st Sat. will immerge.
13	5	0	0	♂ in conj. with 2 α in Lib.
13	23	0	0	☽ in conj. with δ in Aries.
14	0	0	0	♄ Stationary
14	14	11	0	☽ in □ first quarter.
15	0	0	0	☽ in conj. with A in Tau.
15	10	0	0	☽ in conj. with 2 κ in Tau.
16	3	0	0	☽ in conj. with ι in Taurus.
16	4	0	0	☿ in conj. with δ in Cap.
16	4	0	0	☽ in conj. with ♄ long. 15° in Gemini ☽ lat. 35′ S. ♄ lat. 1° 24′ S. diff. lat. 49′.
16	18	0	0	☽ in conj with ζ in Taurus.
17	11	0	0	☽ in conj. with η in Gem.
17	17	0	0	☽ in conj with ν in Gem.
17	17	7	22	♃'s 1st Sat. will immerge.
18	9	0	0	☽ in conj. with ζ in Gem.
18	14	56	0	☉ enters Pisces.
19	11	35	47	♃'s 1st Sat. will immerge.
20	10	0	0	☽ in conj. with 1 α in Can.
20	11	0	0	☽ in conj with 2 α in Can.
21	6	0	0	☽ in conj. with ο in Leo.
21	11	0	0	☿ in conj. with γ in Cap.
21	14	0	0	☽ in conj. with π in Leo.
22	0	25	0	Ecliptic opposition or ☉ new moon.
24	12	0	0	☿ in conj. with δ in Cap.
25	8	0	0	☽ in conj. with ι in Virgo.
26	13	29	34	♃'s 1st Sat. will immerge.
27	16	0	0	☾ in conj. with η in Libra.
27	20	0	0	☾ in conj. with λ in Libra.
28	10	11	57	♃'s 1st Sat. will immerge.
28	16	31	0	☾ in □ last quarter.

The waxing ☽ moon—the waning ☾ moon.

Extraordinary high Spring Tides will happen about the 24th of February, owing to the combined attractive influence of the sun and moon near the equitorial parts of our globe; and which, if attended with strong northerly winds, will be productive of considerable mischief and inconvenience upon our shores next the German Ocean, in the Channel, and in the River Thames, or by south westerly winds in the Irish ea and on our western shores.

Rotherhithe. J. LEWTHWAITE.

METEOROLOGY.

The advantages of meteorological observations can only be available to science by comparing accurate registers taken in different places; we have, therefore, been induced to prevail upon Mr. Watson Perks, of Hitchim, Herts, a gentleman of acknowledged scientific acquirements, to favour us with a copy of his meteorological journal; and have no doubt but that, in connection with the observations upon the atmosphere by Mr. Adams, of Edmonton, with which we have been so long favoured, our readers will find our Meteorological Register, in future, much improved, and therefore more acceptable.

METEOROLOGICAL JOURNAL, December, 1825 and January, 1826.

1825. Dec.	Thermo. Higt.	Low.	Barometer. +	—	Rain in inches.	1825.	Thermo. Higt.	Low.	Barometer. +	—	Rain in inches.
26	48	34	29,84	29,70	,025	Jan.					
27	33	27,5	29,77	29,70	,025	10	32	19,5	29,76	29,60	
28	39	28	29,60	29,55		11	34	25	29,65	29,58	
29	38	30	29,50	station		12	32	18,5	29,79	29,65	
30	35	30	29,56	29,50		13	30	17	29,90	29,80	
31	33	25	29,65	29,60		14	28	13	29,96	29,90	
Jan.						15	30	10	30,20	30,00	
1826.						16	28	10	30,40	30,30	
1	42	25	29,70	29,67		17	33	15	30,40	Station	
2	41	33	29,70	29,67		18	38	19,5	30,36	30,11	
3	40	29,5	29,78	29,75		19	44	38	30,00	29,97	
4	38	32	29,80	station	,025	20	42	31	30,10	30,05	
5	38	33	29,79	29,77		21	40	32	30,08	30,03	
6	39	32	29,68	29,63		22	42	30	30,06	30,06	
7	37	32	29,75	29,70		23	40	28	30,10	30,05	
8	33,5	30	29,87	29,80		24	38	29,5	30,30	30,26	
9	29	23	29,90	29,89		25	35	30	30,20	Station	

LOWER EDMONTON. **CHARLES H. ADAMS,**

Lat. 51° 38′ 0″ N. Long. 0° 4′ 40″ W. from Greenwich.

METEOROLOGICAL JOURNAL, January, 1826.

1826.	Thermo. Max	Min.	Barometer. Morn.	Even.	Wind.	Weather.
Jan.						
1	40	32	29,6	29,55	S. E —S.	Rain and wind—cloudy.
2	38	34	29,6	29,65	E.	Fair—cold wind.
3	37	33	29,65	29,7	E.	Ditto—ditto, slight frost.
4	34	34	29,75	29,75	E.	Ditto—ditto, ditto.
5	34	33	29,7	29,7	E.	Cloudy—snow and slight rain.
6	36	34	29,62	29,57	E.	Ditto—ditto, ditto.
7	35	32	29,67	29,72	E.—N. E.	Cloudy—cold wind.
8	32	29	29,74	29,82	E.	Hard frost—ditto, snow showers.
9	28	22	29,83	29,75	E.	Ditto—cold wind.
10	29	22	29,66	29,5	N. W.	Ditto—some snow.
11	32	24	29,5	29,56	N. W.—N.	Ditto—fair.
12	30	23	29,58	29,64	N. W.	Ditto—ditto.
13	28	21	29,69	29,78	N. W.—W.	Ditto—ditto.
14	28	19	29,82	29,85	N. W.—N.	Ditto—ditto, fog.
15	26	15	29,95	30,13	N.	Ditto—ditto, ditto.
16	26	15	30,2	30,26	N.—E.	Ditto—ditto, ditto.
17	32	21	30,3	30,27	S.	Ditto—ditto, wind.
18	36	30	30,2	29,98	S.—N. W.—E.	Cloudy—cold wind.
19	40	34	29,93	29,9	N. W.	Ditto--mild thaw, slight frost at night.
20	36	34	29,9	30,	N. W. -N.	Cloudy—damp.
21	38	35	29,95	29,92	N. W —W.	Ditto—slight rain.
22	37	32	29,95	29,95	W.—N. W.	Fair morn, heavy fog, & slight frost.
23	40	33	29,94	30,1	W.—N. W.	Cloudy fog and slight rain.
24	34	33	30,15	30,15	N. E.	Ditto—thick fog.

HITCHEN, HERTS. **W. PERKS.**

Lat. 51° 56′ 20″ N. Long. 0° 16′ 30″ W. from Greenwich.

LITERARY AND SCIENTIFIC NOTICES.

Improved Organ.—M. Micg, the Keeper of the Royal Collection of Natural Philosophy, at Madrid, and, who is a great Amateur of Music, has, it is said, from the result of many experiments been enabled to communicate to the organ, a quality which has hitherto been wanting to its perfection, namely the faculty of *gradually* augmenting or diminishing the strength of its tones.

Mr. Cooke has published No. VI. of the Gems of Art, which completes the first Volume of the Work, among its contents will be found Engravings of the celebrated Painting of Correggio: "Christ in the Garden," in the possession of the Duke of Wellington. "Jael and Sisera," after Northcote, in the Council Room of the Royal Academy; "A Gale after Vandevelde," in the possession of G. Morant, Esq.; "The Milk Girl, after Gainsborough," in the Collection of George Phillips, Esq.; "Canal Scene, by Moonlight," after Vanderneer, &c. &c. all of which are executed with the same spirit, taste, and skill, as in the earlier parts, reflecting the greatest credit on the Publisher and the Artists employed.

Hanoverian and Saxon Scenery.—The first part of this new Work of Captain Battye, is published; and if possible, is superior to the same Gentleman's beautiful Illustrations of the Scenery of the Rhine, just completed. This Work is enriched, by the addition of wood cut viguettes to every description; and these being actual views, double the number of subjects in the Volume, making them one hundred and twenty, instead of sixty, as in the preceding Publication. The views chosen are striking and picturesque in the extreme; and among them will be found, The Lochmuhle, Ferdinandstein, Holmstein, and Konigstein, all of which belong to the superior class of landscape, while the Roman Catholic Church at Dresden, is a subject of great interest as an architectural display. The Work is dedicated by permission, to his Majesty; and is truly worthy of the patronage of Royalty.

Messrs. Treuttel and Wurtz, the foreign Booksellers, have nearly ready for Publication, in 1 Vol. 8vo. Embellished with a Portrait, a work entitled, "Alexander I. Emperor of Russia; or, a Sketch of his Life and of the most important Events of his Reign.

A Quarto Volume is preparing for publication, "British Ichthyology," with fine Engravings of the principal Fish of Great Britain, &c. from Drawings taken from Nature, by Sir J. F. Leicester, and some of the first Artists; with a Preface and occasional Remarks, by William Jordan.

African Travellers.—At a Meeting of the French Academy of Sciences, on the 19th ult. the Death of the intrepid African Traveller, M. de Beaufort, was announced by M. Jomard. He stated, that, resolved to penetrate farther than had yet been achieved M. de B. had followed the course of the High Senegal, and was directing his route towards Timbuctoo when he fell, another victim to this fatal climate.

Mr. Joseph Skelton, Author of the Antiquities of Oxford, is preparing for Publication, upwards of fifty Etchings of Antiquities in Bristol, from original Sketches, taken by the late Hugh O'Neill, illustrative of Memoirs of that City, by the Rev. Samuel Seyer, A.M., or to form *a separate volume.*

French Voyage of Discovery.—The Astrolabe, French Corvette, commanded by Dumont de Durville, is about to sail on a Voyage of Discovery. The object of the Voyage is to explore certain parts of the Globe imperfectly known, and especially the coasts of *New Guinea* and *New Zealand.*

A Picturesque Tour in Spain and Portugal, and along the Coast of Africa, from Tangiers to Tetuan, by J. Taylor Knight, and one of the Authors of the "Voyage Pittoresque dans l'Ancienne France," is in the Press. It is to be comprised in twenty-two parts, each containing five engravings, with accompanying letter-press descriptions.

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No. LXV.

Recent Patents.

To Thomas Woolrich Stansfeld, *of Leeds, in the County of York, Merchant, for his Invention of certain Improvements in Power Looms, and in the Preparation of Warps for the same.*

[Sealed 27th July, 1824.]

These improvements consist, first, in certain contrivances adapted to a power loom, by which the warp threads are given out from the beam, and the cloth taken up by the work roll in a more advantageous manner than has heretofore been effected; secondly, in a mode of putting a series of looms into operation by one rotatory shaft, and of stopping the action of any one of these looms, without interrupting the others connected thereto; and, thirdly, in a method of, and apparatus for preparing

warps, that is, dyeing, dressing, and sizing them at one operation. These contrivances will be best understood by reference to the figures exhibited in Plate VI.

Fig. 1, is a section taken across the loom, but in this view several parts which are not new, (such as the apparatus for moving the harness) are omitted in order to shew the improved parts more clearly; *a* is the roller or beam, upon which the yarn or threads for the warp are wound. The threads pass from the warp beam over a tension rod, *b*, which extends along the back part of the loom, and under another tension rod, *c*, affixed to the hinder end of a long lever, *d*, *d*. From the rod, *c*, the warp threads proceed upwards to a roller, *e*, and thence over another roller, *f*, through the helds or heddles, *h*, and through the reed, *i*, in the lay, *k*, where the intervention of the threads produce the cloth, and which when woven, is conducted over the breast-beam, *l*, down to another tension rod, *m*, affixed at the front end of the long lever, *d*, and then upwards to the work-roll, *o*.

In order to put the loom in action, rotatory motion is given to the shaft, *p*, by which means the arms, *q*, *q*, are made to revolve; and tappets or friction rollers near the extremities of these arms, acting within the heart-formed frame or lever, *r*, *r*, *r*, cause that frame or lever to vibrate upon its pivot, fixed below in the curved bar, *s*, *s*. At the upper end of this frame or lever, *r*, a rod, *t*, is attached, which connects the frame, *r*, with the lay, *k*, consequently as the frame, *r*, vibrates, the lay vibrates also, moving with variable velocities in the several parts of its vibration, according to the degree of excentricity of the heart-frame to the rotatory shaft, *p*.

The general construction of the loom having been described, we proceed to explain its actions, which are simi-

lar in most parts to other power looms, and therefore need not be very minutely set forth. The rotation of the main shaft, *p*, with its arms, *q*, moving the frame or lever, *r*, to and fro, as above said, causes the lay, *k*, also to vibrate, in order that in its retired position, the shuttle may be projected across through the open warp, and afterwards when advancing that the shoot or weft thread may be beat up to make the cloth; the throw of the shuttle being effected by the oscillations of the lever, *u*, as in other power looms.

The force with which the reed strikes the cloth in beating up the weft or shoot, causes the warp-threads to be drawn tight, which being passed under the tension rod, *c*, the end of the long lever, *d*, at *c*, by that means becomes slightly raised; when the rod, *c*, which bears against the bent lever, *n*, lifts that lever and withdraws the detent at its reverse end for a moment from the ratchet wheel attached to the warp roller, *a*, by which means one tooth of the ratchet wheel escapes, and the progress of the roller, *a*, causes a small portion of the warp to be given out, the detent being returned again instantly to the ratchet by the force of a spring, acting under the bent lever. In this manner, every time the lay advances, to beat up the weft, an adequate supply of warp is given out.

By the same operation of the lay striking up the weft, the reverse end of the lever, *d*, at *m*, is depressed, and the cloth by that means is drawn forward over the breast-beam, *l*, at which time an arm, *w*, extending from the bottom of the leg of the lay, having a weighted cord attached to it, and passed round a pulley at the end of the work-roll, *o*, draws the work-roll round so as to take up the cloth, the roll being prevented from returning by the pall, *x*, above, which drops into its ratchet teeth.

In order to give additional tension to the warp-threads, when the weft is beating up, a tappet or cam wheel, to be placed upon the main axle, *p*, (not shewn in the figure) is at that time made to depress a lever, *y*, and its perpendicular rod, *z*, which rod having attached to its upper extremity a horizontal rod, *g*, extending across the loom, causes the warp-threads to be drawn down out of their straight direction; and by that means gives an increased tension to the warp; but when the lay is in its retired position, and the sheds of the warp are required to be opened for the passage of the shuttle, then the cam wheel allows the lever, *y*, and rods, *z* and *g*, to rise and relax the tension of the warp so that the sheds may open without resistance.

The opening of the warp is effected as usual, by the alternations of the helds or heddles, *h*, which are supported by a cord that passes over a pulley above; the action being given by treadles in the ordinary way, placed at the lower part of the loom. These treadles are to be acted upon by tappets or cam wheels, upon the rotatory shaft, *p*, but which are omitted in the figure, to avoid confusing those parts that constitute the improvements.

The second feature of the invention, consists in a mode of putting a series of looms to work by one rotatory shaft, and of stopping the action of any one of these looms without interfering with the other looms connected to the same shaft. To effect these objects, it is proposed to place a series of looms side by side in the same building, and to pass one rotatory shaft, *p*, through the whole series; the tappets, or cams, for working the respective looms, are not to be affixed to the rotatory shaft, but are to be made fast to a tube sliding loosely upon the rotatory shaft: which tube, with its tappets or cams, is to be locked into gear with the rotatory shaft, by means of a sliding

clutch box, or such sort of contrivance which is well understood by mechanics in general. All the looms of the series being actuated in this manner, whenever it is found necessary to stop the action of any one of them, its clutch box is slidden back upon the rotatory shaft, and the tube with its cams or tappets being unlocked remains stationary, when the individual loom ceases to act, though all the other looms of the series continue in operation.

The mode of preparing warps proposed by the patentee, which forms the third feature of the invention, is shewn in fig. 2, which is to be considered rather as an imaginary diagram of an apparatus, than an accurate representation of the whole in operation. The yarn is to be wound upon the rollers, *a, a, a, a,* and to be drawn off thence and passed through a funnel, *b*, for the purpose of bringing the threads altogether. A pair of rollers, *c*, receives the yarn and conducts it into the trough, *d*, where it is intended to lay in a considerable quantity immersed in a dyeing liquor. From this trough the yarn, after being dyed, is to be withdrawn and squeezed by the roller, *e*, so as to express the dyeing liquor and return it into the trough. From the rollers, *e*, the yarn is carried forward to other similar rollers, *f*, which conduct the yarn into the trough, *g*, where it passes through a glutinous fluid, for the purpose of sizing.

When the colour of which the yarn is to be dyed, is of the kind that requires a mordant to fix it, another trough containing the mordant is to be placed before the trough, *d*, and the yarn being first passed through the mordant, is then to be submitted to the dyeing liquor as described; after this it may be passed through another trough containing clear water, for the purpose of raising the colour and washing away the dyeing material. The yarn is then to be immersed in the trough, *g*, for the purpose of

being sized, and after sizing, is squeezed by the rollers, *h*, and conducted forward to the reed, *i*.

The threads of the yarn are now to be passed between the partitions of the reed, in order to separate them and prevent their adhering together; after which, the threads being guided over the roller, *k*, are passed through a second reed, *l*, and over another roller, *m*, to a third reed, *n*, where the threads, having become sufficiently separated, are wound upon the warp-roll, *o*, ready to be placed in the loom.

The novel features of this invention are stated to be, 1st, the small tension rod, *b*, in front of the loom, under the warp-roller; the long lever, *d*, extending across the loom, and the two tension rods, *c* and *m*, at its extremities, by which the warp-threads and the cloth are drawn tight, and the bent lever, and click or detent, *n*, which is moved by the vibration of the long lever, *d*, for the purpose of giving out the warp when required. 2nd, The tube that carries the several cams, or tappets, which is made to slide upon the rotatory shaft, *p*, and is locked thereto by means of a clutch box, for the purpose of allowing any one of the looms to be set at rest while the others attached to the same shaft are in action. 3rd, The general arrangement of the rollers, troughs and reeds, by which the threads or yarn for the warp are conducted into the troughs, to be there dyed, dressed or sized, and thence separated and conducted to the warp-beam.

[*Inrolled January*, 1825.]

To JOHN PRICE, *of Stroud, in the County of Gloucester, Engineer, for his Invention of certain Improvements in the Construction of Spinning Machines.*

[Sealed 5th August, 1824.]

THE object of this invention is to spin wool immediately from the carding engine without its undergoing any intermediate processes. To effect this object, alterations are proposed in the construction of the spinning machinery; but the drawing which accompanies the specification being extremely imperfect, and the particular parts improved not being specifically pointed out, we fear that our account of the invention will be found rather unsatisfactory.

Plate VI. fig. 3, is a side view of the machine. The wool from the carding engine is placed upon an endless web, *a*, which is carried forward by the rotation of two rollers, *b* and *c*, to the spindle, *d*, the upper roller, *e*, being for the purpose of pressing upon and confining the slubbing while twisting. The motion of the endless web is produced by the rotation of a shaft, *f*, having a bevel pinion at its lower extremity which actuates the roller, *c*.

The spindle carriage, *g*, is moved backward and forward by means of the machinery, instead of being worked by hand as usual. Any suitable rotatory power being applied to a rigger fixed upon the axle, *h*, which is the driving shaft, that axle is made to turn, and the pinion at its extremity taking into the toothed wheels, *i* and *k*, those wheels are thereby turned also. Affixed to the wheel, *i*, is a conical block with a spiral groove, upon which a cord that is attached to the spindle carriage is

intended to wind, for the purpose of drawing the carriage out with a progressively increasing velocity, at the same time the wheel, *k*, actuating a bevelled pinion upon the shaft, *f*, causes the endless web, *a*, to deliver the slubbing of wool to the spindle.

When the spindle carriage, *g*, begins to advance, the spring catch, *l*, takes hold of the rack, *m*, and brings it forward a short distance, which taking into a toothed wheel at the end of the roller, *c*, causes a small portion of the slubbing to pass through between *c* and *e*, the object of this is to prevent the sudden tension of the wool when the stretching commences, which prevents its breaking. This contrivance is capable of adjustment, so that any quantity of wool may be brought forward according to the intended size of the yarn. When the spring catch arrives at the friction roller, *o*, it becomes depressed, and the rack being released, runs back upon small rollers by the draft of a weighted cord.

Upon the axle of the driving shaft there is a wheel, *p*, from whence a band passes to the pulley, *q*, from this pulley a cord extends to a similar pulley at the reverse end of the machine, which cord is in its course coiled round the twisting drum, *r*, for the purpose of making it turn rapidly, and a cord from this twisting drum passing round the pulley of the spindle, *d*, the spindle is made to revolve with great velocity, and to spin the length of yarn which has been drawn out by the advance of the carriage.

The belt which actuates the driving shaft is now to be thrown off the fixed rigger on to a loose rigger, but whether by hand, or by any other contrivance, is not said; the action of the driving shaft being thus stopped, the carriage is then made to return, and the yarn guided into the copt by hand. When the carriage returns to the back

part of its race, a projecting piece, *s*, strikes against the lower end of a lever, *t*, and causes its upper end to project the rack forward, for the purpose of turning the feeding rollers and giving a supply of slubbing ready for the next operation.

It is in the contemplation of the patentee to employ two rows of spindles in one carriage, and in that case to conduct the slubbings through two sets of feeding rollers. It is also proposed to change the scroll and its wheel, *i*, occasionally according to the different sorts of yarn to be spun.

These are the leading features of the invention, but decribed in the specification in a very crude manner, as we have before said; we are therefore unable to give such explanations of the details as we should otherwise have thought desirable, considering that improvements in spinning wool claim a very prominent place in the manufacturing arts of this kingdom.

[*Inrolled, February*, 1825.]

To CHARLES PHILLIPS, *of Upnor, in the Parish of Frindsbury, in the County of Kent, Esq., for his Invention of certain Improvements on Tillers and Steering wheels of Vessels of various denominations.*

[Sealed 13th July, 1824.]

THE object of the inventor is to reduce the length of the tiller by which a vessel is steered, in order that it may not occupy so much space upon the deck as heretofore, and in doing this it becomes necessary to provide a me-

chanical mode of increasing the effect of the power exerted by the steersman at the hand wheel that actuates the tiller, the adaptation of which mechanical contrivance is claimed as new, when applied to steering wheels. It is also thought desirable to provide a temporary means of confining the rudder when necessary, in any particular position, which contrivance forms another feature of this invention. Lastly, as the different positions of the rudder, will cause the tiller chain or rope to be drawn sometimes in an arc, and at other times in a chord of a circle, an excentricity of the drum or barrel, round which the tiller chain or rope coils, becomes necessary, and this is provided for in two ways, as will be explained.

In Plate VII. fig. 1, is a section taken lengthwise of the upper part of the hull of a vessel towards the stern; *a* is the flooring of the deck; *b* the steering wheel; *c* the rudder. A rope or chain, *d*, is passed round the drum, *e*, of the steering wheel, and descending on both sides proceeds under pulleys, *f* and *g*, to the lever, *h*, attached to and extending behind the rudder. A plan or horizontal view of this part, and also of a wheel above, to be described hereafter, is shewn in the detached figure 2.

It will be evident that by turning the steering-wheel, *b*, the movements of the drum, *e*, will draw the tiller rope or chain, *d*, on one side, and cause the rudder to incline either towards the larboard or starboard, by which the direction of the vessel's course becomes altered. As however, by having shortened the leverage of the tiller, greater force is requisite to turn it, the patentee introduces a system of toothed pinions, and a circular rack, into the head of the drum, *e*, which contrivance is shewn in the detached figure 3.

Against the standard, *i*, a ring, *k*, with an internal rack, is fixed, and at the end of the axle upon which the drum

or barrel, *e*, turns, a toothed pinion, *l*, is also fixed. In the head of this drum, two pivots are inserted, upon which two toothed pinions, *m*, *m*, turn, and by taking into the rack of the ring, *k*, and also into the teeth of the pinion, *l*, a train is formed that causes the drum to turn slowly, when the steering wheel, *b*, is made to revolve, and to draw the tiller-chain or rope with an increased power, proportionate to the difference of diameter between the pinions and the circular rack.

In order to confine the rudder in any desired position, a circular rim, *n*, is made fast upon the top of the rudder, and an elastic strap of wrought iron, as a break, is passed nearly round the wheel, as seen at *o*, *o*, in fig. 2. This elastic strap is attached to the stern of the vessel at one end, by a joint, and at the other end to the middle of a lever, *p*. At the extremities of this lever, a rope is fastened, and this rope is passed under a pulley, *q*, and thence over other pulleys above, and its reverse end brought into such a situation as shall enable the steersman at the wheel to take hold of the handle, *r*, and draw the rope tight when he pleases. By these means the elastic strap, *o*, is brought in close contact with the rim, *n*, and in consequence of the friction of the two surfaces the rudder is prevented from moving until the strap is withdrawn from the surface of the rim, by relaxing the rope.

For the purpose of accommodating the draft of the tiller-chain to the different positions of the rudder, the periphery of the drum, round which the chain coils, is made, slightly deviating from a circle, or its axis is in a small degree excentric. If a rope be attached to a barrel, for the purpose of working an ordinary tiller, a similar sort of contrivance is desirable; this however may be

varied by employing instead of the toothed rim and pinions, a cam formed to answer the same purpose.

[*Inrolled, January*, 1825.]

To JACOB PERKINS, *of Fleet-street, in the City of London, Engineer, for his Invention of certain Improvements in Propelling Vessels.*

[Sealed 9th August 1824.]

THESE improvements consist in a peculiar construction of paddles for propelling boats or other vessels on water, which are to be attached to the hinder parts of such vessels, and to strike against the water in a manner something resembling the tail of a fish in the act of swimming.

Plate VI. fig. 4, is a plan or horizontal view of the apparatus; *a, a, a*, represents the stern part of a vessel; *b, b, b*, an open frame or railing, extending behind the vessel, for the purpose of supporting the outer extremity of the axle of the paddles. This frame or railing is attached to the side of the vessel by pivots, *c, c*, upon which the frame may be moved, for the purpose of elevating or depressing the paddles, so as to place them at a suitable depth in the water, according to the draft of the vessel; *d, d*, and *e, e*, are the paddles, consisting of rotatory oars, the surfaces of which are slightly twisted, and they are affixed upon central shafts, in oblique positions, so as to cause the inclined plains of their surfaces to be constantly pressing against the water as they revolve.

In order to obtain the best effect of this description of

paddle, and keep the action uniform on each side of the vessel, the oars are made to revolve in opposite directions by means of any suitable gear, actuated by the rotatory power of a steam engine or any other first mover.

The oars, *d*, *d*, are affixed to the shaft, *f f*; the oars, *e*, *e*, to a tube, *g*, sliding upon the shaft, *f*. At the inner extremity of the shaft, *f*, a bevel-toothed wheel, *h*, is attached; and also at the inner extremity of the tube, *g*, a similar bevel-toothed wheel, *i*, both of which take into the other bevel-toothed wheels, *k* and *l*, upon the lateral shafts, *m* and *n*. The power of the engine is to be applied to the wheels, *o* or *p*, for the purpose of driving the gear, and actuating the paddles.

Supposing the power of the steam engine to be applied to the toothed wheel, *p*, and that wheel to be by means of its clutches locked to the bevel wheel, *l*, the rotation of these wheels will cause the wheels, *h* and *i*, to turn in opposite directions and to carry round the oars, *e*, *e*, to the right, while the oars, *d*, *d*, turn to the left; this is the action when the vessel is to be moved forward. But if it should be necessary to back the vessel, the winch, *q*, is to be turned in order to withdraw the clutches of the wheel, *p*, from the bevel wheel, *l*, and to bring the wheel, *o*, into gear with the bevel wheel, *k*. The power of the engine being applied to the wheel, *o*, the oars will now move in a contrary direction to that first described, and cause the vessel to move backwards.

In the centre, between the four bevel wheels, there is a block, *r*, which the shaft, *f*, passes through, and in the ends of this block the axles, *m* and *n*, are inserted; by this contrivance, when the paddles are to be raised or depressed, the frame, *b*, turning upon its pivots, *c*, *c*, the wheels all turn upon their axles, *m* and *n*, and the shafts

with the paddles, are placed higher or lower, without in any degree affecting the gear.

By the rotation of the oars, with inclined surfaces, in the manner above described, a continued pressure against the water is effected, and the vessel is thereby propelled in the opposite direction with great rapidity, and with the exertion of a comparatively small power.

[*Inrolled, February*, 1825.]

To THOMAS CARTMELL, *of Doncaster, in the County of York, Gun Maker, for his Invention of an improved Cock, to be applied to the Locks of Guns, Pistols, Fire-Arms, or Ordnance, for the purpose of firing the same by Percussion, acting either by self-priming or otherwise, and whereby the Priming is rendered wholly impervious alike to the Wind, Rain, or Damp.*

[Sealed 6th November, 1824.]

THERE are three different contrivances for discharging fire-arms proposed under this patent, the first of these is a cock with a priming chamber, into which a detonating composition is to be introduced and covered by a spring cap, which cap flies open in the act of discharging, and exposes the detonating composition to the blow of the percussion peg fixed over the touch-hole; the second is a cock with a magazine, which, by the rising of a lever, allows a small detonating ball to descend into a recess in front as the cock is falling on the peg; and third, a cock, with a magazine, containing small detonating balls, one of which is deposited in the priming chamber at every

descent of the cock by means of a spring slider which is called a feeder.

Plate VI. fig. 5, is a side view of a gun with the first-mentioned contrivance applied; *a* is the cock, having a small recess, *b*, to contain the detonating composition, which is to be introduced by hand, and then the cap, *c*, shut down and held fast by a spring catch, *d*, the end of which bears against a projecting piece of the back part of the cap. When the gun is discharged, the cock in the act of falling, causes a cheek on the further side of the cap to strike upon the piece, *e*, extending from the lock plate, and which in striking causes the cap to be thrown up and the recess containing the detonating composition to be exposed to the peg over the touch-hole, as shewn in the figure. When the cock is raised again, a fresh supply of the detonating composition for priming is inserted in the recess, and the cap being shut down, secures it from damp until the piece is discharged.

The second contrivance is shewn in the section of a part of a cock detached at fig. 6. On the top of the cap, *c*, which covers the upper part of the cock as before described, a box, *f*, is affixed, containing a quantity of small detonating balls. In the under side of this box a small aperture is formed, just sufficient for one of the detonating balls to pass through to the recess, *b*, in the front of the cock in order to prime. When the gun is discharged, the cock, in the act of falling, causes the cheek of the cap, *c*, as before described, to strike against the projecting piece, *e*, on the side of the lock plate, and by throwing up the cap exposes the priming to the plug, upon which it falls, and becomes exploded. There is a spring, *g*, fixed into the upper part of the cock, pressing against the under side of the box, *f*, and when the cap is

down upon the cock the end of this spring extends to the edge of the aperture which the detonating balls pass through: the cap turning upon a fulcrum pin, *h*, does not describe the same circle as the end of the spring, *g*, therefore when the cap is thrown up the end of the spring slides over the aperture, and prevents any of the detonating balls from passing through until the cap is shut down again.

The third contrivance is exhibited at fig. 7, in which the upper part of the cock is shewn in section. On the top of the cock is a box, *f*, containing detonating balls as before; the under part of this box is closed by a sliding plate, *i*, in which is a small aperture for the passage of the balls, one at a time, to the priming chamber; when the piece stands at half cock, the spring, *j*, impels the slider forward, which causes one of these balls to be deposited in the recess in front of the cock, and which is confined there by a lateral spring on the side of the cock, as shewn at *k*, in the horizontal section of the upper part of the cock, see fig. 8. When the cock comes down in firing, a pin connected with the sliding plate, *i*, strikes upon the piece, *e*, and causes the sliding plate to be thrown back so as to receive another detonating ball ready for the next firing; at the same time the inclined plain at the end of the lateral spring, *k*, striking against the plug over the touch-hole, causes the priming chamber to become exposed, and the detonating ball to be exploded.

The points claimed under this patent are, 1st. A cock contrived with a receptacle for the priming, covered by a cap, which opens when the piece is discharged. 2ndly, A self-acting magazine for depositing the priming, with a spring which opens and closes the priming aperture,

3rdly. The method of feeding the priming chamber by a sliding plate, as shewn.

[*Inrolled, January,* 1825.]

There are some parts of this invention closely resembling one of the plans proposed in Webster's patent for improvements on percussion gun-locks, see our third volume, page 72, and Plate V. fig. 11.

To Stephen Wilson, *of Streatham, in the County of Surry, Esq., in consequence of communications made to him by foreigners residing abroad, for certain Improvements in Machinery for Making Velvet and other Cut Works.*

[Sealed 7th October, 1824.]

The intention of the patentee is to adapt a loom of the construction usually employed for weaving ribbons, to the production of narrow widths of velvet, and in which loom two ground warps are to be introduced with one pole warp between, for the purpose of weaving two pieces of velvet, face to face, at one operation; and by means of a contrivance for working a series of alternating knives, by the ordinary action of the treadles, the several pieces of velvet so made are to be cut asunder, and drawn off the loom, with the pile or face in a finished state.

Plate VIII. fig. 1, is a perspective view of a loom of the description proposed to be employed, in which the improved parts are but imperfectly exhibited, but are seen more distinctly in the detached figures. The harness of the loom is omitted in this figure to avoid confusion; *a, a,* is the batten, with two rows of shuttles

which is said to be new only as applied to the weaving of velvet; *b* is the roll upon which the upper ground warp-threads are wound; *c* is the roller of the lower ground warp; and *d* is the roller of the pole warp. These three warps pass through reeds in the batten, which reeds must in this case be rather deeper than ordinary reeds, for the purpose of admitting the three warps. The shuttles are intended to move in double rows in the batten, but not exactly as in a ribbon loom, the cause of which and the mode of management to effect the proper operations, is stated to be well understood by the weavers of velvets.

The particular construction and intention of the new parts of the apparatus will be best seen and understood in the detached fig. 2, which exhibits a portion of the batten and breast rolls, with the warps, guides, and cutters, for a single operation; and fig. 3, which represents two leashes, with the three warps attached thereto, and passed through the guides.

The upper and lower ground warps being passed through the eyes of the leash, *e*, and the pole warp through the leash, *f*, the up and down motions of the leashes, as in ordinary weaving, brings the pole warp alternately into connection with one or other of the ground warps, and the to and fro movements of the shuttles produce the intervention of the threads, that is weave the fabric double; the union of the two ground warps being effected by the traversing of the poll warp from the upper to the lower, consequently the threads of the poll warp produce the pile upon the inner surface of the two fabrics. The length of this pile will depend upon the distance at which the two ground warps are placed apart, and this is regulated by the guides, *g*. These guides also conduct the fabric to the cutters.

The cutters are a series of knives mounted upon a board, *h*, fig. 2, which is made to traverse to and fro by a cord, *i, i, i*, passed over pulleys on the side of the loom, (see fig. 1) to the treadles at bottom; consequently the ordinary movements of the treadles cause this board, *h*, to slide to and fro laterally. The knives, *k*, are so placed that they intercept the middle of the woven fabric, and by cutting the connecting threads produced by the pole warp, as described above, split the upper and under portions of the fabric asunder, and leave their inner surfaces with faces of velvet, which are passed over separate rollers to distinct work rolls at the back of the machine.

A similar contrivance is stated to be applicable to the weaving of broad velvets, plush, shag, &c., but in that case, beside the obvious alterations in the batten, reeds, and shuttles, the cutter must be a long knife with a strong back, like a tenant saw.

The claims of novelty in this improved loom are, first, the arrangement of the ground warps one above the other, and the pole warp in the middle, which is common to both; secondly, the guides for conducting the warps, and regulating their distances apart; and thirdly, the knives or cutters for separating the fabric, and the mode of putting those knives in action.

[*Inrolled, February*, 1825.]

To Frederick Benecke, *of Deptford, in the County of Kent, Verdigrise Manufacturer, and* Daniel Towers Shears, *and* James Henry Shears, *of Fleet Market, in the City of London, Coppersmiths, in consequence*

of a communication from a certain Foreigner, for certain Improvements in the Making, Preparing, or Producing of Spelter, or Zinc.

[Sealed 7th October, 1824.]

These improvements in the manufacture of zinc, consist, first in the method of preparing the ores, previously to submitting them to the furnace; and, secondly, in the peculiar disposition of the retorts and their appendages within the furnace, by which the ores may be conveniently introduced, and submitted to distillation, and the product discharged in a pure state into receptacles on the outside.

In the ordinary modes of preparing the sulphate of zinc, or spelter, the ores are submitted to the furnace in a covered melting pot or retort, having a pipe in the bottom of the pot, which descends into a vessel of water, for the purpose of receiving the metal, and condensing the vapours which accompany it; but by a patent obtained about fourteen years ago for improvements in the preparation of zinc, it was proposed, instead of carrying the other metals running from the ore, (such as lead) down the pipe with the melted zinc as above described, that the zinc should be volatilized and pass off from the retort in the state of vapour, leaving the other metals with the residuum in the retort. By the apparatus of the patentees, the latter process is employed, and the improvements, as above stated, consists in the preparation of the ores previously to introducing them into the retorts, and in the disposition of these retorts in the furnace.

Any of the zincs, or sulphates of zinc may be treated in this apparatus, even the poorest qualities of ore may be used; they are to be finely pulverized, as they mix best

in that state with carbon. Calamine requires only to be calcined and powdered. When the sulphates are to be operated upon, the ores require to be first roasted, then exposed to the oxygen of the atmosphere, and wetted with water; when they have become decomposed, they are to be lixivated, for the purpose of extracting the sulphate; the zinc is then to be dried and pulverized, and again calcined until the sulphur is all dispelled.

The pulverized ore is then to be mixed with charcoal, pit-coal, cinders, or other combustibles, and to be wetted with an alkaline ley, such as potash, or pearlash and water, or soda, or common salt; the quantities of these alkaline matters to be varied according to the qualities of the ores; this will be well understood by operative chemists.

The furnace and apparatus in which this prepared zinc is to be distilled, is shewn in Plate VIII. The sort of retort proposed to be employed, is exhibited at *a*, fig. 4; it is formed in the shape of a waggon, with a flat bottom and arched top; it is to be made of fire-clay of the best quality, that is such clay as is least susceptible of being acted upon by fire. The front end, *b*, of the retort, is to be attached to the other part by clay luting; it has two apertures, the upper one circular, to receive the end of the head, *c*, and pipe, *d*, the lower aperture, square, for the purpose of removing the residuum after the operation of distilling has ceased.

Retorts of this description are proposed to be fixed in the furnace, in the manner shewn in the cross section, at fig. 5, which is taken through the retorts lengthwise, and fig. 6, which is an external view of the end of the furnace, exhibiting the situations of five retorts in a row. In this last mentioned figure the several retorts are seen

differently circumstanced, for the purpose of more conveniently explaining the operations of working them.

The first retort on the right hand is seen open and empty; the second is also seen open, but having a portion of the residuum deposed at its bottom, as after the operation of distilling; the third retort is closed by the front end, (*b*, fig. 4): in this will be seen the two apertures above described; the fourth retort has the head and its descending pipe attached, as exhibited in the section, fig. 5; the fifth retort is closed in by a door, *e*, made of fire-clay, for the purpose of preventing the escape of heat.

The retorts being thus fixed in the furnace, the fire is to be raised so as to give a proper heat for the operation, and then the retorts are to be charged with the ores and combustible matters prepared as described, the temperature of the furnace being raised or diminished by the opening and shutting of an air door in the culvert or arch under the fire-grate. In order to introduce the ores to the retort, a stopper is to be withdrawn from the front of the head, *c*, and the ores passed through this aperture into the retort by means of a ladle, or such other convenient implement; when a sufficient quantity of the ore has been placed within the retorts, the stopper is again inserted in the head and luted. After this the outer door, *e*, of the furnace is closed, and the operation of distilling the zinc proceeds, the zinc rising in a volatile state, and passing down the pipe, *d*, to the plate, *f*, where it deposits itself in a pure state, that is free from lead or other metal; a small aperture in the door, *e*, being for the purpose of watching the progress of the operation, and enabling the temperature within to be regulated as occasion shall require.

The patentees propose under some circumstances, to construct a number of cylindrical retorts within a furnace, to be placed side by side, and one above the other, with pipes opening on the outside in front, which will answer the same purpose as the disposition of the retorts above described.

The claims of novelty in this apparatus and process are, 1st, the particular disposition of the several parts whereby the retorts may be more readily charged with the ores and other materials, and the residuum withdrawn after the operation; 2nd, the means of watching the operation, and regulating the temperature, which is effected by the deep culvert below the fire-grate, and allows the zinc to be distilled without destroying the retort; 3rdly, the process of preparing the ores, previously to inserting them in the retort.

[*Inrolled, April*, 1825.]

To MOSES POOLE, *of the Patent Office, Lincoln's Inn, in the County of Middlesex, Gentleman, in consequence of a Communication made to him by a certain Foreigner, residing abroad, for the Preparation of certain Substances for making Candles, including a Wick pecuculiarly constructed for that purpose.*

[Sealed 9th June, 1825.]

THIS invention is a mode or modes of extracting from tallow a peculiar substance, resembling spermaceti both in quality and appearance, which is designed for the manufacture of candles. The patentee states the inven-

tion to be "a mode or modes of clarifying tallow, or any kind of animal fat; and in order to effect this it is necessary, first, to convert the component parts of the tallow or fat into acids, and afterwards to separate one acid, which is in a liquid state, from the other which is solid."

It may be here desirable, for the sake of information, to mention (though it is not stated by the patentee) that animal fat is chiefly composed of two substances, chemically denominated *stearine* and *elaine*, these substances, when saponified by the admixture of an alkali, produce—stearine, *margaric acid*—elaine, *oleic acid;* the margaric acid being solid and crystalline, the oleic fluid and oily.

The specification proceeds to state, that the liquid acid is fit for most of the purposes to which oil is usually applied, and the solid acid is the substance intended to be made into candles.

There are several processes by which the two acids may be obtained, one by the saponification of the tallow or fat, and another by its distillation. The saponification may be effected by incorporating soda, potash, lime, or any other of the alkalies with the fat, as is commonly done in making soap, and the soap thus obtained is to be decomposed by a suitable acid according to the base of the alkali employed. This decomposition should be made in a large quantity of water, kept well stirred during the operation, and warmed by steam introduced in any convenient way. When the mixture has been allowed to stand, the acid of the tallow or fat will rise to the surface, and the water being drawn off, will carry the alkaline or saline matters with it; but if the acids of the tallow should retain any portion of the salts, fresh water may be thrown upon it, and the whole well agitated, until the acids have become perfectly free from the alkaline matters; and when allowed to cool, the acids

will be formed into a solid mass. This mass is now to be submitted to considerable pressure, in an apparatus such as is employed in expressing oil from seed, when the liquid acid will run off, in the form of a substance resembling oil, leaving a solid matter similar in every respect to spermaceti, which is fit for making candles.

The distilling process is effected by submitting the tallow or fat to heat in any ordinary alembic or distilling apparatus. To facilitate the evaporation, a small quantity of steam may be introduced, which will be condensed over with the other products in the worm or other cold receiver that may be used. The operation may be prolonged by keeping up a continual supply of tallow; but in this case the products distilled over must be watched, as they become coloured by this process, and require to be separated according to their different qualities.

The substances produced by this distillation are, the two acids above described, which in order to be purified are to be washed with warm water, as in the preceding operation. The liquid and the solid acids are then separated by pressure, as before described, and if exposed to the air and sun, or treated with alcohol, as is usually practised in the bleaching of wax, the material will be improved in colour.

The above described operations may be combined, for the purpose of obtaining the acids more pure, and free from saline matters, that is to say, after having obtained them by saponification, they may be distilled, and afterwards separated by pressure as before said.

The patentee says, he does not claim the distinct processes of saponification, or distillation, but only when combined with the pressing, for the purpose of separating the liquid from the solid acids, after employing either or both of the processes in question.

The wick to be used in the manufacture of these improved candles, and which forms one of the features of this invention, is to be made of cotton yarn, twisted rather hard, and laid in the same manner as wire is sometimes coiled round the base strings of musical instruments. For this purpose straight rods or wires are to be procured, of suitable lengths, and diameters, according to the intended size of the candles about to be made, and these wires having been covered with cotton, coiled round them as described, are to be inserted in the candle moulds as the common wicks are, and when the candle is made, and perfectly hard, the wire is to be withdrawn, leaving a hollow cylindrical aperture entirely through the middle of the candle.

[*Inrolled December*, 1825.]

The subject of this patent is the invention of the celebrated French chemist, M. Gay Lussac, and is taken out in this country by Mr. Poole, merely as an agent. The discovery appears to be the result of profound chemical knowledge, and not the effect of mere accident, which frequently happens; the advantages, however, of the invention, as applied to the making of candles, must depend upon the comparative costs of this new material, and spermaceti, for which it is proposed as a substitute, and to be rendered at a lower price.

Anxious to throw every possible light upon the subjects presented to the readers of this Journal, we have taken the liberty of extracting some very erudite remarks upon the above patent, published in the last number of the Repertory of Arts, in which the learned and scientific editor of that work, among other matters perfectly irrele-

vant, indulges his readers with the following smart criticism.

"We have seldom seen in so small a compass more gross errors, or such entire ignorance of the first principles of chemistry, in any document professing to treat of chemical subjects, as are exhibited in the specification of this patent. As a curious development of the aberrations of the human intellect, we should be glad to know what could lead the patentee to assert, that tallow consisted of two acids, or that the matters of which it was composed, or into which it can be converted by saponification, were *acids*.

"Fourcroy, and other eminent chemists, have long since favoured the public with accounts of the chemical nature of tallow and oils, and from these, the last thing that we should imagine is, that they were composed of *acids*; and it is even the opinion of the excellent chemist first mentioned, that the sebacic acid which is procured from tallow by certain processes, is entirely a result from these processes, proceeding principally from the action of the fire used in them, and by no means existing previously in the tallow."

To Pierre Jean Baptiste Victor Gosset, *of Clerkenwell Green, in the County of Middlesex, for his Invention of certain Improvements in the Construction of Looms, or Machinery for Weaving various sorts of Cloth or Fabrics.*

[Sealed 18th December, 1824.]

The patentee commences his specification by saying, that his "improvements relate to that part of looms or

weaving machinery which is usually denominated the shuttle, being the implement or apparatus which contains the yarn or material employed to form the woof or weft of the cloth or fabric." He goes on to state, that great difficulty has been experienced in the ordinary kind of shuttles in causing the thread or yarn to come off the bobbin or shuttle cap, with uniform tension, without which it is almost impossible to produce a good and even cloth; but by the improved form and construction of the shuttle herein proposed, and the disposition of the bobbin, he is enabled to apply a spring for the purpose of creating the necessary resistance upon the bobbin, which spring is furnished with an adjusting screw for regulating the tension of the yarn, according as circumstances may require.

Plate VIII. fig. 7, is a section of the improved shuttle; *a* is the bobbin or weft-roller, formed with flanges as a pulley, it turns freely upon a pin passed perpendicularly through the shuttle. On the upper side of the shuttle there is a long elastic slip of steele, *b*, *b*, the ends of which are let into the wood. To this slip is affixed a small bent spring, *c*, which passes through an aperture in the wood, and bears upon the side of the bobbin; *d* is an adjusting screw, the head of which is countersunk into the steel slip, in order to prevent its catching against the warp threads as the shuttle passes to and fro. This adjusting screw proceeds through the wood, and takes into a small nut, *e*, fixed into the wood in the recess within the shuttle. By turning the adjusting screw, the steel slip will be drawn closer, to or removed farther from the shuttle, and consequently the small bent spring will be made to bear with greater or less pressure against the side of the bobbin, by which means the rotation of the bobbin will be retarded, and the tension of the weft thread, as it is drawn off the

bobbin, regulated as circumstances shall require. The upper and lower surfaces of the shuttle are proposed to be formed concave, that the steel slip may not project so as to impede the progress of the shuttle as it moves along the race.

This kind of shuttle is particularly applicable to the weaving of wire gauze, such as is employed for making the improved meat safes, for which the present inventor obtained a patent dated 18th December, 1823, (see our VIIIth Vol., page 9.) The regulating spring may be adapted to the shuttle in several other ways beside that shewn, in all of which, however, the small spring must bear against the bobbin.

In weaving wire gauze with this improved shuttle, it is found desirable to employ a casing or tube made of some elastic substance to surround the bobbin, as shewn by dots in the figure. This tube is not quite entire, but has an opening or slit down its side, for the purpose of allowing the weft wire to pass through; the tube by thus encompassing the bobbin, prevents the coil of wire from becoming loose, or entangling, and allows the wire to be drawn off evenly and regularly as it may be required. When the wire to be woven is stiff and hard, it is recommended to employ a small pair of tempered steel rollers in the side of the shuttle, by which means the wire runs out with less friction.

The same sort of regulating springs may be introduced advantageously in shuttles employed for weaving fabrics of silk and other materials, in the manner shewn at fig. 8. This shuttle is hollowed out on the top and bottom, and has three bobbins or pullies, introduced as shewn by dots, at *a*, *a*, *a*; these are intended to be used one after the other, without the necessity of stopping the

work to renew the spent bobbin, or they may contain different colours suited to the different parts of the work, which will be extremely useful, particularly in weaving plaids; the thread of one bobbin is only to be broken off, and that of the next taken into the work, which will supercede the necessity of shifting the shuttles. In this figure the steel slips which carry the regulating springs, are shewn at *b*, *b*, *b*, and are similar to those described above. A greater or less number of bobbins than these may in this way be employed in these improved shuttles.

[*Inrolled June*, 1825.]

Original Communications.

On Locomotive Steam Carriages.

THE various plans upon which locomotive steam carriages have been heretofore constructed are considered to be more or less defective, not so much in principle as in the modifications of their parts. As respects the production of steam, either the boilers have been too weighty and cumbersome, and therefore unfit for rapid transportation on rail-ways and other roads: or if of lesser dimensions, incompetent to generate a sufficient quantity of steam to bring out the full effective power which the engine was designed to exert. With regard to the mechanical agents by which such carriages have been impelled forward, either the power has been

applied in an inconvenient way, so as to lose a great portion of the effective force of the engine, or attended with so much friction, as to consume a very considerable portion of the power uselessly. Besides these objections, the general detail of the machinery has in many instances been imperfect in its construction, and injudicious in its application, so that the general failures in attempts to construct steam carriages, are not to be attributed so much to erroneous principle, as to the ineligible manner in which those principles have been put into operation.

Mr. Mathew Murray of Leeds, whose great experience and superior talent in the construction of steam engines, the scientific world are well aware of, has proposed a design for a locomotive steam engine, which he considers will be found to possess superior advantages to any that have been heretofore employed. This plan for a locomotive engine, however, is to be considered but as a design, for though Mr. M. believes it to possess advantages over all others heretofore made, or at present in use, yet he is far from presenting it as a piece of machinery that is not susceptible of improvement; it is rather given to the public, as the best construction of steam carriage, according to his view, that the present stage of science will admit of.

Plate VII. fig. 4, is an elevation of the steam engine and its appendages, and also a section of the boiler, its furnace and flues, both of which are intended to run upon a railway, and to be connected together. Fig. 5, is a horizontal view of the same, and in describing the operations of the machinery the similar letters will refer to the same parts respectively in both figures.

a, *a* is a double line of iron rails fixed in stone bearings as usual; *b*, *b* are plate wheels of iron, or wood and iron united by bolts and screws, having flanges on their inner

sides to keep their actions within the lines of the double rails. These wheels support the engine and boiler frames, and by them are conducted forward upon the rail-way, the axles bearing upon springs, to prevent any jolting in passing over small obstructions. The whole of the machinery appertaining to the engine is mounted upon a cast-iron frame; *c*, *c* are two working steam cylinders, cased as usual with wood or other imperfect conductor of caloric, to prevent the radiation of heat; *d*, *d* are the condensing boxes under the cylinders; *e*, *e* are rods attached to the pistons working within the cylinders, and also to the vibrating beams, *f*, *f*; *g*, *g* are standers for supporting the fulcrum ends of the beam; these standards are attached to the frame-work and to the beams by joints at bottom and top, which allow them to rock to and fro, and thereby permit the piston rods to move perpendicularly; *h*, *h* are rods connected to the beams above and to cranks below, (the further one shewn by dots); these rods are for the purpose of transferring the motions of the engine from the pistons to the cranks, *i*, *i*, which cranks are placed upon the axle of a toothed wheel, *k*, at right angles to each other, in order that the stroke of one piston may overcome the dead point of the other. This toothed wheel takes into a similar toothed wheel, *l*, upon the axle of the two running wheels in front, and by turning that axle causes the fore wheels to go round, and the engine carriage to be impelled forward by the friction of the peripheries of the wheels upon the railway.

Rods, *m*, *m*, are to be employed to connect the fore and hind wheels together, as shewn in the horizontal view, fig. 5, by which the rotatory power of the engine will be communicated to drive the hind wheels also.

Behind the engine carriage, and connected to it, is the boiler and its carriage, running along the railway upon

similar wheels to those described. Upon the axle of the hind wheels of the engine carriage a wheel, *n*, is affixed, turning round it. Over the periphery of this spur wheel, *n*, and another similar spur wheel, *o*, upon the axle of the fore wheels of the boiler carriage, an endless chain, *p*, is passed, which by the rotation of *n*, causes *o* and its running wheel to turn, thus the boiler carriage is drawn forward upon the rail-way by the engine, and in contact with it.

The boiler is mounted upon a carriage, as above said, the axles of the running wheels of which bear upon springs in boxes like the engine carriage, but these can only be shewn by dots, and the two carriages are connected by a link and screw box, which allows of regulating and accurately adjusting their distance apart.

The boiler and furnace is shown in section, for the purpose of exhibiting its internal form more clearly, *q*, *q*, *q*, is the boiler occupied with water, nearly to the top, but leaving a space above for collecting of the steam; *r*, is the fire-grate consisting of bars placed upon an inclination, with an ash pit below, this is completely surrounded by the water in the boiler; *s*, *s*, is the flue and chimney, which has a damper near its top, for the purpose of regulating the draft and heat. The fuel is supplied to the furnace by a hopper, *t*, having a feeding roller and plate in the coal box, *u*, which is worked by the running wheels, and hence the quantity of fuel necessary to supply the furnace is regulated and deposited at certain intervals upon the fire below.

The steam generated in the upper part of the boiler, passes along the copper pipe *v*, *v*, which is fitted with universal joints, in order to accommodate itself to the agitation of the two carriages as they proceed upon the rail-way. From the pipe *v*, the steam is conducted by

branches to the working cylinders *c, c,* where the induction and eduction valves are opened and shut by similar contrivances to those employed for the same purpose in other steam engines. After the steam has performed its office, it passes off by the pipe, *w, w,* into the chimney, and thence into the atmosphere. The tram waggons or other carriages to be propelled by this engine, are to be attached to the hinder part of the boiler carriage, and to be by those means drawn along the line of rail-way.

This is the construction and adaptation of parts, not new in themselves, but judiciously combined, for a locomotive engine as proposed by Mr. Murray. There is much more simplicity in the contrivance than in any locomotive engine that we have seen; and on the score of economy, as well as power, we have every reason to expect that it would be found more advantageous, than any other locomotive engine that has heretofore been employed.

Jordan's Perpetual Motion.

In our last number, page 73, after describing Jordan's intended construction of apparatus for obtaining a perpetual motion, we promised to demonstrate the fallacy of the scheme. That fallacy, however, is so very obvious, that a few words will render the fact evident.

By referring to this subject described as abovesaid, and exhibited in Plate III. fig 3, it will be seen that *d, d,* represents a scale beam, and that *e* and *f,* are pendent rods extending from the ends of this scale beam, at equal distances from the centre or fulcrum; consequently, any upward force applied to one of these rods will produce

an exact equivalent, or downward force at the other rod, attached to the reverse end of the beam, (excepting the dimunition of power caused by friction). This the inventor admits; but having by the contrivance of the floating barrels, brought the upward force to bear against an arm, extending laterally from the perpendicular rod, he considers this arm to have produced a temporary elongation of the lever or beam, and by that means to have increased the mechanical force, by the lengthened leverage. It is, however, to be remembered, that the upward force, whatever it may be, and upon whatever part of the pendent apparatus it may be exerted, becomes concentrated at the joint of the perpendicular rod at the end of the vibrating beam; consequently, the length of the acting lever is not in reality increased, and therefore the effect of the force will be the same, whether it is exerted against the end of the perpendicular rod, or upon an arm extending therefrom.

This may be demonstrated by a simple experiment. Take an ordinary pair of scales, carefully balanced, and place three ounce or pound weights in each scale, and attach to one scale an arm, extending out beyond the end of the beam (a common flat rule of a foot long, laid across the scale, will very well answer the purpose). The weight of the arm or rule, being exactly counterpoised, by an equivalent weight in the opposite scale, the three pound or ounce weights placed in the centre of one scale, exactly balancing the three similar weights in the centre of the other scale, let one of the weights be sliden along the extended arm or rule, and it will be found, that, though the lever or scale beam, is here extended exactly in the same way as described in the project above, that the beam will remain in equilibrium,

because the force is concentrated at the joint in the end of the scale beam.

The main feature of the invention, viz. the supposed increased power of the elongated lever, being thus proved to be in error, the other parts of the project scarcely need be noticed; but it may be as well to mention another erroneous part of the scheme. The air vessel or barrel, when at the bottom of the tank, will exert a greater upward pressure, than when near the water's surface; hence a greater power is actually exerted by the buoyancy of the acting vessel in raising the depressed end of the lever, than would be sufficient to depress the vessel under the elevated end of the lever (without considering the effect of friction), but when these two air vessels arrive at the same level in the tanks, their forces will balance each other, and then the beam will rest in a horizontal position.

Novel Inventions.

Snowden's Wheel-way.

A small portion of a wheel-way, upon the plan proposed by Mr. Snowden, (see our Xth vol. p. 337), has just been laid down in the factory of Mr. S., No. 319 and 320, Oxford-street, for the purpose of illustrating to the public the advantages of his new invention.—It consists of a hollow trunk of cast-iron, about fifteen inches square and eighteen feet long. This trunk is bedded in earth on each side, for the purpose of giving

it additional stability, and on the top is flat plates of iron, forming a road-way of about twenty inches broad, for the running wheels of the carriage to traverse upon.

The carriage employed for this temporary exhibition is a small car, capable of holding one person, who turns a winch horizontally, for the purpose of impelling the carriage forward. This winch is fixed upon a perpendicular shaft, which passes through the bottom of the carriage, and through the long slit or aperture between the top plates into the trunk below, where a toothed wheel attached to the extremity of the shaft, takes into a rack in the side of the trunk, and by thus turning the shaft with the toothed wheel, the car and the rider are carried along the wheel-way.

This portion of a wheel-way is made the full size that the patentee now intends to construct his trunk, and its wheels, and is intended to shew its superiority over the ordinary kinds of rail-ways, particularly in point of safety, as it is impossible for a carriage to run out of its course, or overturn, however rapid its progress, the impelling agents being confined to the trunk below.

In a circular issued by Mr. S., he says, "This railway (which the patentee denominates a wheel-way), may be distinguished from all others, owing to the machinery attached to the motive force being placed in a track within or beneath the surface of the ground. The safety gained by such peculiarity of construction, is an object of the first moment. Presuming it to be admitted that a travelling steam engine is liable to meet with obstructions, whatever form of rail is selected—whether with side flanges, a rack on the outside, or an edge-rail—and if driven from its course at a speed of eight or ten miles an hour, (which a pebble-stone or any other slight cause would occasion), danger must ensue. It will be

perceived, by the specimen exhibited, in what manner an occurrence of so serious a nature is intended to be obviated; namely, by the attachment within the track, that renders the regular progress of the moving power, and all the burden connected, perfectly certain.

"The machinery dispenses with a raised rim of any kind, and affords a perfect flat surface for the running wheels: these support the weight of the travelling apparatus, leaving the toothed wheel unencumbered, and freely to act in a straight or curved direction, being kept to the pitch line by the anti-friction rollers coming into use whenever required.

"Having provided for increased safety, it may be necessary here to notice that speed is the next object the inventor has had in view; and he depends on succeeding in this respect, inasmuch, as let the power employed be either steam or that of horses, neither can be used with greater effect in any other plan on a level, and certainly not in ascending an inclined plane, as the means and arrangement exhibited will admit. He anticipates no danger in travelling at the rate of eight or ten miles per hour.

"It is not on the combined effect alone of uniting speed with safety that the inventor comes before the public;—he supposes he has provided a permanency of construction not equalled, and some other minor advantages, which the limits of a circular will not allow of being particularised. These remarks are chiefly confined to that part of the design adapted for the use of steam; and as soon as the new application of horse-power can be exhibited, a fuller description will be given."

Polytechnic and Scientific Intelligence.

ROYAL SOCIETY.

(*Continued from page* 105.)

Thursday, Nov. 24.—A paper was read, entitled, *An Account of the Construction and Adjustment of the new Standard of Weights and Measures of the United Kingdom of Great Britain and Ireland, by* Captain Henry Kater, F.R.S.

The author, after stating that the weights and measures of the United Kingdom are founded on a standard, whose length is determined by its proportion to that of a pendulum vibrating mean time in London, which has been ascertained by him to be 39.13929 inches of Sir George Shuckburgh's scale, deems it necessary, on account of the importance of the result, to consider what degree of confidence it is entitled to. For this purpose it is necessary to compare this final result with those obtained in other experiments, and by different methods. Now it appears that previous to the experiments detailed in the author's paper on the subject in the *Phil. Trans.* for 1818, on which this result rests, another series is there mentioned, made with the same instruments, but under circumstances which occasioned their rejection, and which, owing to some remains in the instruments between the two series, which occasioned a material alteration in

the distance between the knife edges, have all the weight of experiments made with a different pendulum. The result of these rejected experiments, however, differed only two ten-thousandths of an inch from that ultimately adopted.

The author next compares the lengths of the seconds' pendulum at Unst and at Leith fort, as ascertained by him by an invariable pendulum, whose vibrations had previously been determined in London, and whose length was thus known in terms of the London seconds' pendulum, and as ascertained by M. Biot at the same stations by means of a variety of pendulums, and by a totally different method of observation—that of Borda. The results of this comparison are, a difference between the determinations of M. B. and of the author, of 0.00029 inches in excess at the former station, and 0.00015 in defect at the latter.

From this near agreement of all the results, he considers that the length of the seconds' pendulum in London may be regarded as certainly known to within one ten-thousandth of an inch; while from the near agreement of the results of the French and English experiments on the length of the pendulum, he concludes that the length of the metre in parts of Sir G. Schuckburgh's scale may also be regarded as known within one ten-thousandth of an inch.

From an account recently published by Captain Sabine of his valuable experiments for the determination of the variations in length of the seconds' pendulum, he observes, doubts may be inferred of the accuracy of the method employed by him for the observations for determining the length of the seconds' pendulum in London, as well as in those which have been made with the invariable pendulum. It is asserted there, that taking a mean

between the disappearances and re-appearances of the dic is a more correct method of observation than that pursued by Captain Kater, and that the intervals between the coincidences obtained, by observing the disappearances only of the disc, would be productive of error.

In answer to this objection, the author remarks, 1st, That with respect to the convertible pendulum, or that used for determining the absolute length of the seconds' pendulum, the disc was made to subtend precisely the same angle as the tail-piece of the pendulum, so that at the moment of disappearance, its centre necessarily coincided precisely with the middle of the tail-piece, and the difference between the moments of disappearance and re-appearance is rigorously nothing; an adjustment indispensable in his method of observing, when the object is to determine the *true* number of vibrations in 24 hours.

2dly. With the invariable pendulum the disc subtended a somewhat less angle than the tail-piece, so that the inferred number of vibrations in 24 hours was diminished about two-tenths of a second. But experiments with the invariable pendulum being intended to be in the strictest sense of the word comparative, this constant difference will no way affect the ultimate result. But, as the most direct way to remove any doubts which may be entertained on the subject, the author has computed, from the whole of Captain Sabine's observations, the successive differences in the vibrations at the various stations visited by him, by the two methods, viz. that of employing the disappearances and re-appearances, and the disappearances alone. The results only in one instance differ so much as a tenth of a vibration, they are indifferently in excess and defect, and the mean of the decre-

pancies is exactly nothing. From this he concludes, that if the observations be made as nearly as possible under similar circumstances, the method of observing by disappearances alone, is productive of no perceptible error in practice, in experiments with the invariable pendulum; while in those with the convertible pendulum, the equal apparent sizes of the disc and tail-piece, preclude the possibility of any, either in practice or theory, from this cause.

The standard of Sir G. Shuckburgh having been found identical with that by Bird, in the custody of the Clerk of the House of Commons, adopted as the imperial standard unit of extension, the length of the pendulum already determined is fixed with the same degree of precision in parts of the imperial standard yard.

A repetition of Sir G. Shuckburgh's experiments on the weight of given volumes of distilled water, and a remeasurement of the cube, sphere, and cylinder, used by him, were found to give no material variation from his results, these being stated in terms of the mean of several standard weights kept at the House of Commons. The troy pound nearest the mean has been adopted, and declared by the legislature to be the original unit of weight under the denomination of the imperial standard troy pound.

The relation between this pound and the cubic inch of distilled water at 62° Fahr., bar. 30in., has been ascertained by the commissioners of weights and measures, who find that the latter contains 252.458 gr., each grain being the 5760th part of the standard troy pound.

The avoirdupois pound is fixed by assigning its proportion to the standard troy pound, so as to contain exactly 7000 such grains.

The imperial standard gallon is defined by stating its

contents under the same circumstances of temperature and pressure, as 10lbs. avoirdupois of distilled water, and the bushel by its containing 80 such pounds.

The author, having, in compliance with a request of the Lords Commissioners of His Majesty's Treasury, undertaken to superintend the construction of, and to adjust, the principal standards to be deposited at the Exchequer, Guildhall, Dublin, and Edinburgh; Mr. Dollond was directed to prepare those of linear measure, and Mr. Bate those of weight and measure, the proper quality of metal for the latter purpose being determined by experiments instituted for the purpose. The experiments for adjusting them are then given in full detail. The troy pounds were first adjusted, and the exactness with which this operation has been performed, may be appreciated from this, that the final errors of none of them exceeded 22 ten-thousandths of a grain. When brought so near, it was of course not thought necessary to attempt further correction.

The avoirdupois pounds and the weights of a gallon of water were then derived from the troy pounds, and finally adjusted, like them, by enclosing within the weight in hollows left for the purpose, wires equal to the errors ascertained to exist in them. The weights of these wires in each case is stated, so that should they by any accident be taken out and lost, they may be restored.

He next describes the method used in adjusting the gallon itself, the method of filling it exactly, and of weighing it when filled, together with the corrections depending on the circumstances of temperature and pressure under which the experiments were made. As a final result, it appears that one only of the gallons was ultimately found in error to a greater extent than 6 tenths of

a grain, the others having their errors less than a fourth of that quantity.

The quarts and pints being next disposed of, the author describes the balance contrived by him for weighing the bushels, which proved so delicate as to turn with a single grain when loaded with 250lbs. in each scale. The resulting bushels when finally adjusted, were found to have all their apparent errors less than 6.56 grains of water; while the corrections for temperature and pressure only, amounted in some cases to no less than 138 grains; but this depending on the figure of the glass used to cover them, it is not to be understood that the contents of the vessels have actually been ascertained to this degree of precision.

The adjustment of the standard yards is next described, and the author concludes his paper by a summary of the results arrived at in the present inquiry respecting British weights and measures. The length (he remarks) of the pendulum vibrating seconds in London has been found in parts of the imperial standard yard, so that the value of the yard may at any time be known, having been referred to a natural standard presumed unalterable. The length of the French metre, a standard expressing a certain portion of the terrestrial meridian, has also been given in parts of the English scale. The weight of a cubic inch of distilled water has been determined in parts of the imperial troy pound, and thus the pound, if lost, may at any future age be recovered. The avoirdupois pound is now for the first time defined, and the measures of capacity are made to depend on the weight of water they contain; the imperial gallon, containing ten pounds avoirdupois of water, having been declared to be the unit, or only standard measure of capacity from

which all others are to be derived. This, it is to be presumed, will tend to produce uniformity throughout the United Kingdom, by putting it in the power of every individual possessed of standard weights to verify his measures of capacity with the utmost facility. (H.)

Wednesday, November 30, being St. Andrew's day, the Royal Society held their anniversary meeting. After the auditors had made their report relative to the accounts of the Society, the president informed the members that two Copley medals had been awarded by the council, the one to M. Arago, of the Royal Academy of Sciences at Paris, and F.R.S.; and the other to Mr. Peter Barlow, F.R.S., Professor in the Royal Military Academy at Woolwich. "The discoveries and labours," said the president, "which your council have made it their pleasure and thought it their duty to honour, by conferring on their authors the highest rewards* of this Society, both belong to the same department of science—Magnetism—a department which has always claimed a considerable portion of your attention, both in its relations to philosophy and utility; to the laws and properties of natural forms; and to navigation, the great source of the power and prosperity of this mighty empire." Sir Humphry Davy then proceeded to enter somewhat in detail into the history of magnetism, and more especially dwelt upon the importance of the recent discoveries relating to its mysterious connection with electrical phenomena. He enumerated the leading results of the en-

* We are happy in being able to state that the Copley medal is no longer the highest honorary reward in the gift of the Royal Society, his Majesty having been graciously pleased to confer upon the Society two annual medals of the value of fifty pounds each, to be awarded for scientific discoveries, as the council shall deem most expedient.

quiries and experiments of M. Arago and of Mr. Barlow; and having stated that Mr. South would receive the medal on the part of, and transmit it to M. Arago, addressed him nearly as follows:—"In transmitting this medal to M. Arago, assure him of the deep interest we take in his important researches, and inform him that we await with impatience the continuance of his labours. As a fellow of this Society, his discoveries have for us the the same interest that they have for his brethren of the Royal Academy of Sciences, which for more than a century and a half, has gone on encouraging and emulating our labours. You, and our worthy secretary, Mr. Herschel, are examples of recent liberality on their part, and of the respect paid to British talent. We, I trust, shall never be behind them in dignity and nobleness of sentiment—far be from us that narrow policy which would contract the minds of individuals, and injure the interests of nations, by cold and exclusive selfishness, which would raise the greatness of one people by lowering the standard of that of another. As in commerce, so in science, no one country can become worthily preeminent, except in profiting by the wants, resources, and wealth, of its neighbours. Every new discovery may be considered as a new species of manufacture, awaking novel interest and sagacity, and employing new capital of mind. When Newton," said the president, "developed the system of the universe, and established his own glory and that of his country on imperishable foundations, he might be regarded as giving a boon to the civilized world, for which no adequate compensation could ever be made; yet even in this, the most difficult and sublime field of discovery, Britain has been repaid, if not fully, yet fairly, by the labours of Euler, La Grange, and,

above all, La Place, perfecting the theory of the lunar motions and planetary perturbations, and affording data of infinite importance in the theory and practice of navigation. Fortunately, science, like the nature to which it belongs, is neither limited by time or space; it belongs to the world, and is of no country and of no age—the more we know, the more we feel our ignorace—the more we feel how much remains known, &c.;—and in philosophy, the sentiment of the Macedonian hero can never apply—*there* are always new worlds to conquer."

On delivering the medal to Mr. Barlow, the president said, that although he had already been honoured by marks of approbation more valuable in a pecuniary point of view, he trusted that none would give him more durable satisfaction; "for this award," said Sir Humphry, "has, I believe, never been made, except after a dispassionate and candid discussion; never to gratify private feelings, or to call for popular applause. We trust," continued the president, "both on account of the public good and your own glory, that you will engage in and accomplish many new labours. You have not merely had scientific success, but one still more gratifying to your feelings—the idea that you have been useful to your country, and secured the gratitude of a body of men who are not tardy in acknowledging benefits."

The Society then proceeded to the election of a Council and Officers for the year ensuing.

French Patents.

Granted 1825, (*continued from Vol. XI. Page* 107.)

To Charles Marie Victor Sommereux, rue de Chantre, Paris, for a means of drying yeast, and rendering it susceptible of preservation—11th August—10 years.

To Jean Joseph Allard, rue St. Denis, Paris, for a process to cover over or fill with divers substances the meshes of wire gauze—11th August—10 years.

To Jacques Francois Gelhaye, rue St. Croix, Paris, for an hydraulic machine intended to raise water, called Gelhaye Hydraulique—11th August—15 years.

To Timothy Burstall, of Leith, Scotland, for a mechanical "locomotive" steam carriage, and for improvements in the construction and mode of supplying with water the boilers for generating steam—11th August—15 years.

To Jacques Antoine Courtois, rue des Deux Nortes St. Sauveur, Paris, for making bricks, &c. mitres of baked earth, which unites them for the construction of chimneys—18th August—5 years.

To Louis Polère, for a means of making pasteboard with straw only—18th August—5 years.

To Edouard Delcambre, rue Neuve d'Orleans, Paris, for a manufacture of paper, which combines vellum and pasteboard of every thickness, and paper of a different colour on each side, and vellum paper in imitation of *Vergeuse*—18th August—15 years.

To Edouard Marie Louis Ternaux, rue du Petit Reposoir, Paris, for a machine to clean, card, pick, and draw the threads of wool and cotton—18th August—15 years.

To Felix Danal, of Montpellier, for an apparatus for essaying the spirituosité of wines—18th August—5 years.

To Henry Chambers, of London, for a process for filtering and clearing water—18th August—5 years.

To Louis le Grand, of Lille, for a process for making glue from bones by the aid of steam—25th August—10 years.

To Charles Catharine Joubert, rue des Ecrivains, for a machine for the making of round awls for saddlers and shoemakers—25th August—10 years.

To Francis Marie Lemoine, rue des Marais, Paris, for a musical instrument, called "Forte Campano"—25th August—5 years.

To Alexander Etienne Denevers, rue St. Denis, for the employment of a vegetable matter for the fabrication of artificial flowers—25th August—10 years.

To Aimè Jacques Desiré, of Limoges, for the application of a key to a flageolet, to give half-tones—25th August—5 years.

To Marie Martin Philippe Mengin and Alphonse Pettitjeun, for machines for making des clous d'epingle, called Pointes de Paris—25th August—15 years.

To Richard Carter, London, for a process by which gas may be rendered portable, and applied to illumination—25th August—15 years.

To Jean Joseph Allard, rue St. Denis, Paris, for the application of metallique cloth and other transparencies, to the fabrication of shades for lamps and other objects of spherical form, and offering portions of these forms for the *confection* of new stuffs for *cartonnage*, and the binding of books, hats, &c.—25th August—5 years.

To Louis Antoine Pauwels, rue du Fauxbourg Poissonnière, for a machine to measure gas in its passage, called "*gazhydromètre*"—25th August—5 years.

To Hippolyte Deslyons de Noircame, of Arques, for a process for making shaded chrystals imitating agate, different marbles and veined stones.—31st August—10 years.

To Felix Gomme and Co. of Essert, for the fabrication of iron and brass casseròles, and other utensils of the same kind, by means of a balance—31st August—5 years.

To Chretien Frederic Lehnert, rue Notre Dame de Nazareth, Paris, for the fabrication of powder horns with plates, in shell leaf of different forms and colours—31st August—5 years.

To Jean Louis Roger, rue de Montgolffer, Paris, for the application of ends of whalebone to the ornamental parts of umbrellas—31st August—5 years.

To Michell Schelheimer, rue de la Verrerie, Paris, for the means of imitating precious stones and brilliants by metals—31st August—5 years.

To Alexander Lorgnier, of Boulogne, for improvements made in the manufacture of grooved tiles—31st August—15 years.

To Antoine Blondeau, rue de la Paix, Paris, for a perpetual quantième—31st August—5 years.

To Auguste Chammas, rue St. Martin, Paris, for a preparation which he calls Crème cosmétique de Bengal—31st August—5 years.

To David Joseph Vandevoorde and Louis Julien Jean de Vandenetz, both of Paris, for the means of posting bills, which will remain as long as desired, by classification in frames, which may be locked, for announcing public notices—31st August—10 years.

To Jean Francois Petit, of Paris, for the fabrication of flowers, which are called "Fleurs naturelles transparentes"—9th September—5 years.

To Pierre Francois Geslin, of Paris, for the fabrication of a colour, which he calls "Metallique Blanc," to supercede the ordinary white lead—9th September—5 years.

To Benoit Alais, of Lyons, for the means of executing patterns in imitation of embroidery, and producing the effect of blonde lace—9th Sept.—10 years.

To Joseph Marie Guidicelli, of Paris, for a machine to produce immediately a circular motion, by steam, by aeriform fluids, and by water—14th September—15 years.

To Jean Pierre Duban, of Paris, for a box to pack up ladies' hats—14th September—5 years.

To John Heathcote, of Tiverton, England, for divers means of moving the *arcs* of the machine used for making bobbin-net—14th September—15 years.

To Louis Nicholas Deberque, of Paris, for a loom to weave linen, cotton, silk and wool—14th September—15 years.

To John Mansel Snowden, of London, for the construction of wheel ways, and for carriages to be used on them, and for a mechanism called "Cheval Mecanique"—21st September—10 years.

To Basil Jean Dubost, of Lyons, for a combination of steam engines to tow vessels without horses, on great and small rivers—21st September—15 years.

To Le Sieur Cournier, of Saint Roman, for a machine to improve the *tirage* drawing of silks, which he calls "Lissoir"—21st September—5 years.

To Jean Francois Henri Delamorinière, of Paris, for a machine to make bricks, tiles, &c. by compression—21st September—10 years.

To Jean Francois Joseph Billiette, of Paris, for elastic clogs, which may be raised and lengthened at pleasure—29th September—5 years.

To Edouard Vernes and Co. of Lyons, for a loom of which the clapper and shuttle act by the same movement, proper for the fabrication of all kinds of stuffs—29th September—10 years.

To Claude Caplain, of Rouen, for a machine for the extraction of teeth—29th September—5 years.

To Pierre Bernardet, of Paris, for a method of teaching to write in six or eight days—29th September—10 years.

PREMIUMS

Proposed by the Society for the Encouragement of National Industry for the Years 1826, 1827, 1828, *and* 1830.

	Frks.	
For machinery and implements, at a low price, to reduce beet-root for manufacturing sugar -	1,500	1st May, 1826.
Ditto do. - -	1,200	do.
For a machine to manufacture optic glasses -	2,500	do.
For a hand-mill to shell beans, &c. -	1,000	do.
For the application of the hydraulic press to the manufacturing of wine, oil, and cider -	2,000	do.
For machinery to shave skins, the hair of which are employed in the manufacture of hats -	1,000	do.
For the discovery of a substitute for the colour ultramarine, extracted from the *lapis lazuti*	6,000	do.
For the best improvement in the dying of hats -	3,000	do
For the manufacturing of paper with the bark of the mulberry tree - - -	3,000	do.
For improvements in casting of iron -	6,000	do.
For improvements in the moulding of pieces in cast-iron, which are to receive additional labour - - - -	6,000	do.
For wool, or other materials, to manufacture the inferior quality of hats . - -	600	do.
For a new process of silvering looking-glasses -	2,400	do.
For improved materials employed for copper-plate engravings - - - -	1,500	do.
For the discovery of a metal less subject to oxidation than iron and steel, to be employed in such machinery as is made use of for grinding soft - - - -	3,000	do
For an economical process to produce ice -	2,000	do.
For a material to be employed as a substitute for plaster mouldings, capable of resisting the action of the atmosphere like freestone -	2,000	do.
For a mill to clean buck wheat - -	600	do.
For the sowing of the Scotch pine tree (pinus rubra)	500	do.
For the introduction of the *artisian* wells or pumps, where they do not exist - -	1,500	do.
For the importation into France of foreign plants, useful to agriculture, manufactures, and the arts	2,000	do.
Ditto do. - -	1,000	do.
For 1827.		
For the application of the hydraulic wheels, called "Turbines," into glass houses and other manufactories - - -	6,000	1st May, 1827
For the manufacturing of steel wire for sewing needles - - - -	6,000	do.
For the manufacturing of needles - -	3,000	do.

For the manufacturing of strong glue -	2,000	1st May, 1827.
For the manufacturing of crucibles -	3,000	do.
For the manufacturing of isinglass -	2,000	do.
For the dessicating (drying) of meat - -	5,000	do.
For improving the construction of furnaces, three premiums at 3,000f. each - -	9,000	do.
For a descriptive memorial on the most useful industry or manufacture to be introduced into country places for the employment of females -	3,000	do.
Ditto do. - -	1,500	do.
For 1828.		
For the preparation of flax and hemp without steeping in water - - -	6,000	do.
For the sowing of the north pine tree, called "laricio" - - -	1,000	do.
For 1830.		
For the cultivating and planting grounds, or situations on a declivity - - -	3,000	do
Ditto do. - -	1,500	do.
For determining the actual effects of lime as manure - - -	1.500	do.
	103,800fr.	

N.B. The models, plans, and drawings, with the descriptions, the memorials, &c. must be delivered in, on, or before the 1st of May of the above-mentioned years.

General conditions *to be observed* by the competitors.

Those who obtain a prize, must allow the faculty to take a *brevet d'invention*, if the object is worth it.

The models, memoirs, descriptions, &c. from the competitors, must be addressed, (post paid) to the Secretary of the Society of Encouragement, &c. Rue du Bac, No. 42, Paris. They must be sent before the 1st of May, every year. (To this time they must be very exact.)

The machines, &c. will be examined by the commissioners appointed by the Society.

Foreigners are admitted to complete; but in case they obtain a prize, the object so rewarded becomes the property of the Society, and the inventor must not put it in execution iu Frauce, nor take a *brevet d'invention.*

The members of the administrating council, and the two censors are not allowed to complete for the prizes.

The other members of the Society are allowed to compete.

The competitors are not to put their names to their memorials, but make a private mark; but upon the models, they must put a sealed note, containing their name and place of abode.

The medals or the money will be remitted to those who obtain the prizes, or to their agent at the General Meeting, 26th, October, 1825.

COUNT CHAPTAL, President.

COUNT DE LASTEYRIE AND DUKE OF DOUDEAUVILLE, Vice-Presidents.

BARON DE GERAUDO, Secretary.

CL. ANTHELME COSTAZ, AND JOMARD, Assistant Secretaries.

New Patents Sealed, 1826.

To Robert Rigg, of Bowstead Hill, in the parish of Burgh, by Sands, in the county of Cumberland, gentleman, for his invention of a new condensing apparatus to be used with or applied to the apparatus now in use for making vinegar—Sealed 4th February—6 months.

To Josias Christopher Gamble, of Liffeybank, in the county of Dublin, chemist, for his invention of certain apparatus for the concentration and chrystallization of aluminous and other saline and chrystallizable solutions, part of which apparatus may be applied to the general purposes of evaporation, distillation, inspissation, desiccation, and especially to the generation of steam—7th February—4 months.

To William Mayhew, of Union-street, Southwark, in the county of Surrey, and William White, of Cheapside, in the city of London, hat-manufacturers, for their new invented improvment in the manufacture of hats—7th February—6 months.

To Hugh Evans, harbour master, of the port of Holyhead, in the island and county of Anglesea, North Wales, for his invention of a certain method or methods of rendering ships and other vessels, whether sailing or propelled by steam, more safe in cases of danger by leakage, bilging, or letting in water than at present constructed—7th February—2 months.

To William Chapman, of the town and county of Newcastle-upon-Tyne, civil engineer, for his invention of certain improved machinery for loading or reloading of ships, vessels, or crafts—7th February—2 months.

To Benjamin Cook, of Birmingham, brass founder, for his invention of certain improvements in making files of various descriptions—7th February—6 months.

To William Warren, of Crown-street, Finsbury-square, gentleman, in consequence of a communication made to him by a certain foreigner resident abroad, for an invention of certain improvements in the process of extracting from the Peruvian bark medicinal substances, or properties known by the name of Quinine and Cinchonine, and preparing the various salts to which these substances may serve as a basis—11th February—6 months.

To John Lane Higgins, of Oxford-street, in the county of Middlesex, Esq. for his invention of certain improvements in the construction of the masts, yards, sails, rigging of ships and smaller vessels, and in the tackle used for working or navigating the same—11th February—6 months.

To Benjamin Newmarch, of Cheltenham, in the county of Gloucester, gentleman, and Charles Bonner, of the city of Gloucester, brazier, for their mechanical invention to be applied for the purpose of suspending and securing windows, gates, doors, shutters, blinds, and other apparatus—18th February—6 months.

To Thomas Walter, of Luton, in the county of Bedford, straw hat manufacturer, for his invention of certain improvements in the manufacture of straw platt, for the purpose of making bonnets, hats, and other articles—18th February—6 months.

To Charles Whitlaw, of Bayswater Terrace, Paddington, in the county of Middlesex, medicinal botanist, for his invention of an improvement or improvements in administering medicines by the agency of steam or vapour—18th February—6 months.

To Arnold Buffum, late of Massachusetts, in the United States of America, but now residing in Bridge-street, in the city of London, (being one of the people called Quakers) hat-manufacturer, in consequence of communications made to him by certain foreigners residing abroad, and discoveries made by himself, for an invention of certain improvements in the process of making or manufacturing and dying hats—18th February—6 months.

D.	H.	M.	S.	
1	7	0	0	☾ in conj. with ς in Oph.
2	5	0	0	☾ in conj. with 1 μ in Sag.
2	6	0	0	☾ in conj. with 2 μ in Sag.
3	8	0	0	☾ in conj. with d in Sag.
4	13	0	0	☾ in conj. with β in Cap.
7	12	5	47	♃'s 1st Sat. will emerge.
8	4	30	0	Ecliptic Conjunction or ● New Moon.
9	6	34	15	♃'s 1st Sat. will emerge.
9	0	0	0	♀ 12 dig. illuminated.
10	5	0	0	☿ in conj. with ♀ long. 19° in Pisces ☿ lat. 1° 35′ S. ♀ lat. 1° 45′ N. dif. lat. 3° 20′
12	0	0	0	☽ in apog.
13	6	0	0	☽ in conj. with δ in Aries.
14	8	0	0	☽ in conj. with A in Tau.
14	13	59	44	♃'s 1st Sat. will emerge.
14	18	0	0	☽ in conj. with 2 $\varkappa$ in Tau.
15	11	0	0	☽ in conj. with ι in Taurus.
15	14	0	0	☽ in conj. with ♄ long. 15° in Gemini ☽ lat. 56′ S. ♄ lat. 1° 15′ S. diff. lat. 19′
16	3	0	0	☽ in conj. with ζ in Taurus.
16	8	28	13	♃'s 1st Sat. will emerge.
16	9	30	0	☽ in □ first quarter.

D.	H.	M.	S.	
17	2	0	0	☽ in conj with ν in Gem.
17	18	0	0	☽ in conj. with ζ in Gem.
19	20	0	0	☽ in conj. with 1 α in Can.
19	21	0	0	☽ in conj with 2 α in Can.
20	15	11	0	☉ enters Aries.
20	16	0	0	☽ in conj. with o in Leo.
21	1	0	0	☽ in conj. with π in Leo.
21	15	53	47	♃'s 1st Sat. will emerge.
22	0	0	0	☿ in ascending node.
22	21	0	0	☿ in conj. with ϵ in Pisces.
23	10	22	17	♃'s 1st Sat. will emerge.
23	10	42	0	Ecliptic opposition or ○ full moon.
24	12	0	0	☿ in conj. with ζ in Pisces.
24	18	0	0	☾ in conj. with ι in Virgo.
25	0	0	0	☾ in perige.
26	23	0	0	☾ in conj with ν in Libra.
26	0	0	0	☿ in perihelion.
27	4	0	0	☾ in conj. with λ in Libra.
28	14	0	0	☾ in conj. with ς in Oph.
29	11	0	0	☾ in conj. wtth 1 μ in Sag.
29	12	0	0	☾ in conj. with 2 μ in Sag.
30	0	0	0	♂ Stationary.
30	2	3	0	☾ in □ last quarter.
30	12	16	28	♃'s 1st Sat. will emerge.
30	14	0	0	☾ in conj. with d in Sagit.
31	18	0	0	☾ in conj. with β in Cap.

The waxing ☽ moon—the waning ☾ moon.

Rotherhithe. J. LEWTHWAITE.

The beautiful Planet Venus will be a morning star until the 10th of this month, and will after that time, be an evening star until December. She will set at London about 5 o'clock P.M. in the beginning of the month, and about half past 6 at the end.

The spring quarter begins, on the 21st, at 11 minutes past 3 in the morning.

SUN BEFORE THE CLOCK.

	′	″
1st day............	12	41
5th day............	11	50
10th day............	10	36
15th day............	9	14
20th day............	7	45
25th day............	6	13
30th day............	4	39

1826.	Thermo. Higt.	Thermo. Low.	Barometer. +	Barometer. —	Rain in inches.	1826.	Thermo. Higt.	Thermo. Low.	Barometer. +	Barometer. —	Rain in inches.
JAN.						FEB.					
26	37	31	30,18	30,17		10	37	26	30,12	30,10	
27	35	22	30,16	30,10		11	40	32	30,04	30,00	,05
28	38	24	30,10	30,08		12	49	30	30,01	29,95	
29	43	25,5	29,98	29,90		13	49	36	30,04	29,90	,05
30	47	30	29,75	29,60		14	47	36	29,89	29,85	,05
31	47	39	29,70	29,67		15	52	43	29,88	29,87	,225
FEB.	45	38	29,77	29,70		16	56	41	29,66	29,62	
1						17	45	38	29,47	29,30	,15
2	51	40	29,76	29,72		18	44	29	29,78	29,65	,25
3	51	43	29,66	station	,05	19	52	34	29,50	29,47	,1
4	48	37	29,80	station	,1	20	50	42	29,95	29,70	,1
5	49	38	29,78	29,70	,025	21	52	35	30,20	30,15	,05
6	54	44	29,48	29,46	,025	22	55	40	29,93	29,84	,1
7	51	37	30,16	29,84	,25	23	45	39	29,80	Station	,1
8	45	26	30,20	30,20		24	45	31	30,07	30,00	,025
9	37	25	30,15	30,10							

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 38′ 0″ N. Long. 0° 4′ 40″ W. from Greenwich.

METEOROLOGICAL JOURNAL, JANUARY AND FEBRUARY, 1826.

1826.	Thermo. Max.	Thermo. Min.	Barometer. Morn.	Barometer. Even.	Wind.	Weather.
JAN.						
25	34	32	30,10	30,07	S. E.	Slight frost—fog.
26	34	32	30,07	30,07	S. E.—E.	Ditto—cloudy.
27	36	31	30,07	30,07	N. W.—W.	Fair—frost.
28	40	31	30,02	29,97	W.—S. W.	Ditto—ditto.
29	41	32	29,88	29,75	S. W.	Ditto—ditto.
30	43	36	29,64	29,52	S. W.	Cloudy—small rain.
31	45	42	29,54	29,60	W.—S. W.	Ditto—fair, brisk wind.
FEB.						
1	43	40	29,65	29,63	S.	Fog and small rain.
2	50	44	29,63	29,62	S. S.—W.	Fair—clear—brisk wind.
3	48	47	29,54	29,50	S. W.	Rain ⅛ inches, and wind.
4	46	41	29,67	29,68	S. W.—W.	Cloudy.
5	48	42	29,66	29,50	S. W.—S.	Ditto—rain, and high wind.
6	52	48	29,34	29,36	S. W.—W.	Ditto—ditto, ditto, rain ⅜ inches.
7	50	38	29,75	30,08	W.	Fair—clear.
8	46	35	30,10	30,10	W.	Ditto—ditto, cold wind.
9	42	33	30,05	30,01	W. S.—W.	Fog—sun—ditto.
10	37	33	30,01	29,98	W.	Ditto—cloudy—ditto.
11	37	33	29,94	29,87	S.—S. E.	Cloudy—cold wind.
12	49	38	29,84	29,95	S. W.	Ditto—small rain.
13	48	40	29,95	29,80	S. W.	Fair—sun and clouds—high wind.
14	46	43	29,73	29,79	S. W.	Small rain.
15	51	44	29,77	29,63	S.—S. W.	Rain ¼ inches.
16	54	43	29,59	29,50	S.	Cloudy and showers—high wind.
17	50	38	29,20	29,44	W.—N. W.	Rain ½ inches—hail, &c.—ditto.
18	46	36	29,52	29,65	W.	Stormy—hail and rain.
19	53	42	29,37	29,35	W. S.—W.	Rain ⅜ inches—high wind.
20	50	42	29,57	29,83	N. W.	Fair—clear—ditto.
21	50	38	30,06	29,90	W.—S. W.	Cloudy—cold wind—rain.

HITCHEN, HERTS. W. PERKS.

Lat. 51° 56′ 20″ N. Long. 0° 16′ 30″ W. from Greenwich.

LITERARY AND SCIENTIFIC NOTICES.

Africa.—By some late accounts received from Tripoli, we find that Mr. Laing had reached Gadamas in November, and calculated on being at Timbuctoo, by the 10th of December.

At the French Academy of Sciences, in January last, was presented, by M. Geoffry Saint Helaire, a human monster, which has just been discovered in a collection of animal mummies, forming part of a splendid cabinet of antiquities, recently imported from Egypt, by that able artist and antiquary, M. Passalacqua.

This monster belongs to the class known by the name of amencephalous, characterised by the complete privation of the brain and spinal marrow; and exceedingly interesting, first as questioning of the Cartesian philosophy, that thought is generated in the brain; and, secondly, as opposed to the more recent theory of the origin of the nerves in the cerebral and vertebral pulp.

A new work is announced as being in the press, from the pen of Dr. Henderson, author of "A Residence in Ireland," termed Biblical Researches and Travels in Russia, including a Tour in the Crimea, and the Passage of the Caucasus; with observations on the State of the Rabbinical and Karaite Jews, the Mahomedans, and the Pagan Tribes, inhabiting the southern provinces of the Russian Empire.

In a few days will be ready, in a large octavo volume, embellished with a coloured plate, Letters from the East, written during a recent Tour through Turkey, Egypt, Arabia, Palestine, Syria, and Greece, by John Carne, Esq. of Queen's College, Cambridge.

Paris.—It has been long in contemplation to convert Paris into a Port, by means of a canal, which is to be fed principally by the Seine River; the project is still in agitation, and some of the French journals are discussing the best means of bringing to bear an object of so much commercial importance.

A monument to the memory of the late General Sir Thomas Picton, designed by Mr. Nash, has recently been erected near Carmarthen. The plan is extremely simple, and produces a fine effect; this erection will perpetuate the fame of this gallant soldier, to the land which gave him birth.

In the Bombay Journals of August, we find some account of a Chevalier Rienzi, who had arrived at Bombay, by way of the Red Sea, after traversing the three Arabias being the first European who had visited the country between Mount Sainen and Assab, and the vicinity of the ancient Adulis. During his journey he made a fine collection of antiquities, natural history, and other subjects of great curiosity.

American Expedition.—Captain Beachy is now in the Pacific Ocean, with the vessels under his command. The objects in view, are surveys of coasts at present little known, and ultimately to pass Behring's Straits, for the purpose of joining Captain Franklin.

Mr. John H. Brady, author of the "Varieties of Literature," is making great progress with a work, on "The Derivation of the names of the principal market towns, and remarkable villages in every county in England," with notices of local antiquities, historical and topographical anecdotes.

Diorama.—The view of Rouen, which we mentioned some time back to be in preparation, is now exhibiting to the public. The prospect is taken from the high ground about a mile from the city, on the road from Paris. Our limits will not allow us to describe this delightful scene; we can only say, that the artist has been alike happy in his choice of subject as in its execution, and perhaps there are few prospects that afford so much scope for his extraordinary talent as those in the neighbourhood of this city. The effect of sunshine, and its transition to a shower and a rainbow, is truly admirable.

The second scene, is the interior of the magnificent chapel of Roslyn, by daylight, in which the rays of the sun, occasionally breaking through the gothic arches, produce an effect of grandeur and indeed sublimity, that we do not remember to have ever before witnessed upon canvas.

THE

London

JOURNAL OF ARTS AND SCIENCES.

No. LXVI.

Recent Patents.

To Robert Stephenson, *of Bridge Town, in the Parish of Old Stratford, in the County of Warwick, Engineer, for his Invention of Axletrees, to remedy the extra friction on Curves to Waggons, Carts, Cars, and Carriages used, or to be used on Rail Roads, Tramways, and other Public Roads.*

[Sealed 23rd January, 1826.]

Mr. Robert Stephenson, late of Newcastle-upon-Tyne, is the engineer who projected and carried into effect that extraordinary work the Hetton Colliery, and constructed the various ingenious mechanical contrivances for conveying the coal from the pit mouth along a line of railway of about eight miles extent, over hills and dales, to the town of Sunderland.

In the course of this, and other similar works, Mr. Stephenson frequently noticed the immense friction produced

by the wheels of the loaded carriages upon the rails at those parts of the line where the road turned or curved, which induced him to consider of some method of preventing this inconvenience, and the result has been the simple but effective contrivance which constitutes the subject of this patent.

We shall not here enlarge upon the existing evils above mentioned, or the advantages of the plan proposed to remedy them, the patentee having communicated to us a few practical observations relative thereto, which are given in the original communications of the present number; to these we refer our readers, and proceed to explain the principles of the invention.

The specification commences by stating, that the merits of this invention, will be best understood by first observing, that whenever the railway deviates from a straight line, the opposite wheels of a carriage running thereon, must necessarily pass over different extents of surface, that is, the outer wheels must traverse over a longer line than the inner wheels. To accommodate, therefore, the different velocities with which the opposite wheels must move when running upon curved parts of the line of railway, the wheels have been frequently attached loosely upon fixed axles, but this has allowed of some little freedom or play, and consequently the action of the wheels could not be confined to the precise limits of the parallel rails, without enlarging the breadth of the peripheries of the wheels, or the breadth of the rails, and hence increasing their weight and cost. The most convenient mode, therefore, has been found to fix the running wheels of the carriages upon revolving axles; but here the inconvenience of friction presents itself, as in passing over curves the outer wheels must consequently be dragged or made to slide forward upon the rail, and the wearing away

both of the rail and of the wheel, by this friction, has been so considerable, as to render new wheels and new rails, at certain parts of the line, necessary every three or four years.

The present invention is, therefore, designed to remedy this evil, and consists in adapting a separate shaft or axle to each of the running wheels, in the manner exhibited in plate IX. Fig. 1, is a horizontal view of the frame or carriage of a railway waggon, having the improvement attached. Figs. 2 and 3, are vertical views of the same, taken on the inner side of the frame. Fig. 4, is an end view of the carriage, and one pair of the wheels.

It is proposed to affix to the outer extremity of each axle, *a*, the running wheel, *b*, and to the inner extremity of the said axle a ball or spherical knob, *c*. That part of the axle which is nearest to the wheel turns in a long slot or recess, in the bearing, *d*; the ball, *c*, at the reverse end of the axle, turns in a socket in the opposite bearing. By these means, the wheels run independently of each other, and consequently any difference of extent which their peripheries may be made to pass over, will not cause them to rub or slide upon the rail.

As it is impossible to keep the line of rail perfectly level, they being subject to sink or bend by the pressure of the heavy weights carried upon them, whenever any one of the wheels happens to pass over a hollow place in the rail, the long slot allows the axle and its wheel to fall (as at A. fig. 3,) the ball and socket joint at the reverse end giving it play. By these means the flange of the wheel, which is on the outer side of its periphery, is kept always against the outer side of the rail, tending to keep the rails together, and preventing the possibility of the wheel running off, as it might otherwise do if raised up from the rail.

The patentee concludes his specification, by saying that though he has described a ball and socket joint at the smaller end of the axle, yet he does not mean to confine himself to the ball and socket strictly, as several other modes of constructing a loose joint will perhaps nearly as well answer the purpose; but he claims especially the double axles, and the mode of giving them play, by the loose joint at one end of its bearing, and the slot at the other.

[*Inrolled, March,* 1826.]

To JOHN BURRIDGE, *of Nelson Square, Blackfriars Road, in the County of Surry, Merchant, for his Invention of certain Improvements in Brick Houses, or other Materials, for the better Ventilation of Houses and other Buildings.*

[Sealed 9th June, 1825.]

THE specification commences by saying, that it has been proved beyond all doubt, that much of the valuable timber, used in the erection of houses and other buildings, becomes affected by dry rot, from the want of proper ventilation, and that many attempts have been made to produce an efficacious ventilation of the timbers, but hitherto without success. The patentee, therefore, proposes to prevent dry rot in timbers, by making the walls of buildings, with air channels through them in different directions, so as to expose the ends of the joists, and other wood-work, to the action of the atmospheric air.

In order to accomplish this object, without increasing the expence of building, it is proposed to form bricks

with bevels, or rebates at their angles, or flutes in their sides, by which means, when the walls of the buildings are erecting, the bricks may be so put together, as to produce, with the greatest facility, channels of any desired figure, and running in any suitable direction, through which channels the air is intended to pass to the timbers, and it is considered that by these means the dry-rot will be effectually prevented.

These improved bricks are to be made of the same materials and dimensions as ordinary bricks, but small portions, at their angles and elsewhere, are to be removed, that is bevelled or rebated edges are to be formed by taking off an inch or an inch and a half, from one or two of the angles, in an oblique direction or otherwise, as circumstances may require.

Several different forms of bricks are shewn, in Plate X., but the patentee does not mean to confine himself precisely to these forms, as others may perhaps be found eligible under some circumstances: these bricks are therefore exhibited, rather as illustrative of the proposed mode of building, than as definite forms of bricks claimed under the patent.

Fig. 1, is a brick bevelled all round its upper edges; fig. 2, is bevelled on the sides, and fig. 3, at its ends only; fig. 4, has a piece removed, in an oblique direction from its end; fig. 5, is cut with a rebate and bevel at its end, and fig. 6. has a rebate, formed lengthwise in its upper edge, and a bevel also. These rebates and bevels may, as before said, be otherwise contrived to suit particular situations. Fig. 7, has a groove formed across it, and fig. 8, has two grooves; these grooves may be semicircular, as shewn, or square, or any other figure as may be desired.

Fig. 9. shews a piece of brick-work, consisting of four bricks, each with one bevelled edge; these when put together, leave a space or channel in the middle of a diamond form. Fig. 10, represents the brick fig. 6, with a plain brick placed upon it. Fig. 11, is an end view of the bricks fig. 5, and two fig. 4, with one plain brick combined; fig. 12, is two bricks fig. 7, put together, forming a cylindrical channel between them.

These examples might be multiplied, but sufficient is here shewn, to explain the intention of the inventor, and his mode of forming channels through brick-work, for the passage of air, to the ends of the joists and other timbers, which constitutes the leading feature of the patent; this, however, is further exemplified by a portion of wall, fig. 13, with the end of a joist, and the air passages denoted by arrows.

The specification concludes by saying, "It will appear evident that with materials thus formed, apertures for the passage of air may be made in, and through walls of any dimensions, and being conducted round the ends of beams or timbers in the way before shewn, the decay that is so frequently occasioned in timbers, by the want of proper ventilation, will be completely prevented, and that without any increase of expence in the first erection.

"And I hereby declare that although I prefer the method of forming apertures through walls, for the purpose of ventilation, by the application of bricks, stones, or other materials, formed as herein described, yet many other forms of apertures, may be made at pleasure, without departing from the principle I have invented. But whatever shaped cavities are adopted, care must be taken if they are made in moulds, that they be such as can be conveniently delivered, because when the moulds for

making bricks of this description, are properly made, they may be used with the same facility and expedition as in the manufacture of common bricks.

"And I further declare that my invention consists entirely in forming and applying bricks, stones, or other materials as herein described: by the use of which in the way I have explained, the timbers in houses and other buildings will be most effectually ventilated, and thereby preserved from the premature decay so universally complained of."

[*Inrolled December*, 1825.]

Mr. Burridge has favoured us with a paper upon the subject of this patent, some extracts from which will be found among the original communications of the present number.

To JAMES BATEMAN, *of Upper-street, Islington, in the County of Middlesex, Fruiterer, for his Invention of a Portable Life Boat.*

[Sealed 26th February, 1825.]

THIS life-boat (or we should rather call it raft) is proposed to be constructed by packing cork in canvas cases, and boarding the upper and under sides of the cases with planks to preserve its shape, the whole being securely fastened by iron plates, bolts, and keys.

The form of this boat, or raft, is shewn in plate IX. at fig. 5. The parts are here seen open and ready for use; but the whole will pack together into less than half its

present bulk, for the purpose of convenient stowage. The apparatus consists of two canvas boxes, *a a*, filled with pieces of cork or other light buoyant material. On the upper and under sides of these boxes, there are planks, *b*, *b*, with plates of iron, *c c*, laid over them; these are confined, and the whole made fast by bolts, passing through, and secured by nuts or keys.

There are two strong planks, *d*, *d*, on the under side of the raft with long grooves, in which are inserted dovetailed, or other formed nibs, affixed to the under sides of the boxes at *e*, *e*, for the purpose of enabling the sides of the raft to be sliden in and out. Another plank, *f*, is attached to the upper side of the raft, and secured by bolts and keys, in order to render the whole tight and firm.

The persons to be conveyed by this boat or raft, are intended to be seated upon the lower planks, *d*, *d*, and are to place their feet upon the iron bar, *g*, which is made fast to the under part of the raft, by four chains; this bar is also designed to act as ballast, for the purpose of keeping the raft from upsetting. There is a ring and staple affixed to the plank, *f*, by which the boat or raft may be suspended, and lowered down into the water, or hoisted up on to the deck of a ship. When oars are used to impel this raft, the loops, *h*, *h*, are to receive them, and there are small recesses at *i*, *i*, for stowing provisions.

When this raft is not in use, the bolts or keys may be withdrawn from the upper plank, and the two sides brought together; the apparatus will then pack into a convenient compass for stowing away.

[*Inrolled, April*, 1825.]

To Charles Heathorn, *of Maidstone, in the County of Kent, Lime Burner, for his Invention of a new method of constructing and erecting a Furnace or Furnaces, Kiln or Kilns, for the more speedy, more effectual, and more economical manufacture of Lime, by means of applying, directing, and limiting or regulating the Flame and Heat arising in the manufacturing or burning Coal into Coke, and thus making Lime and Coke in the same Building, and at the same time.*

[Sealed 11th November, 1824.]

The principle of this invention appears to be nearly as evidently shewn in the title of the patent as in the specification, for the patentee has not stated in what part of the construction of his kilns novelty exists; we therefore presume, that he claims to be the inventor of combining coke ovens with a lime kiln, and rendering the heat evolved from the ovens available to the burning of lime. Mr. De Jongh, of Warrington, obtained a patent, in the early part of the year 1824, for applying the heat of a coke oven to the generating of steam, (see our eighth volume, page 194.)

The present invention is exhibited in plate X. where fig. 15, is a section of the lime kiln, and two coke ovens connected thereto, taken perpendicularly through the centre of the shaft. It is to be erected of fire bricks or fire stones of the ordinary kind, but though the dimensions of every part is minutely described in the specification, in feet and inches, (which the scale under the figure will give,) the patentee cannot certainly intend to

limit his patent right to these particular dimensions or proportions; *a, a*, are the ovens for burning the coals into coke, the mouths of which are closed by sliding doors in front, to be opened or shut by levers and chains; *b, b*, is the shaft of the lime kiln, with a partition wall *c*, in the lower part; *d, d*, are lateral flues for conducting the heat from the coke ovens. These flues are separated into several channels, for the purpose of guiding the flame more regularly.

The materials which are to be burnt into lime, are drawn up to a platform, *e*, by means of a winch and axle; they are then to be thrown down the shaft from the top, resting upon the iron bars, *f, f*, at bottom, and the flames issuing from the ovens through the flues, being stopped or directed by the partition wall, *c*, cause the fire to spread uniformly through the whole mass of materials in the shaft.

In order to disturb the lime in the shaft during the time it is burning, there are a number of stoke holes provided in different parts of the shaft, which, however, are to be closed during the operation by iron doors on the outside, and when the lime has become sufficiently burned, it may be withdrawn from the shaft at the bottom by removing the iron bars, *f*.

The patentee concludes his description of the invention, by saying, " the principle hereof, although above exemplified in a kiln, with two coke ovens only, may be extended to kilns with more or less ovens at pleasure, care being taken in the construction thereof, to add the tongue or party wall of sufficient height for guiding the flame, and giving sufficient chambers and flues, for the flame of each oven to enter into the great lime shaft, as before described; and the preventing the access of atmospheric

air to the shaft below the bed, or floor of the oven, or, when working, by any other way than through the mouths of the respective ovens, as herein before described.

[*Inrolled, January,* 1825.]

To Robert Bowman, *of Aberdeen, Scotland, Chain Cable Maker, for his Improved Apparatus, for stopping, releasing and regulating Chain, and other Cables of Vessels, which he denominates Elastic Stoppers.*

[Sealed 9th December, 1824.]

The object of this invention is to give a certain degree of elasticity to a ship's cable, when the vessel rides at anchor. The mode of effecting this is certainly ingenious: it consists in securing that part of the cable which passes over the deck to the capstan, to a sliding box, by means of falling wedges, and attaching to this sliding box, rods, which extend from pistons, working in cylinders that are filled with condensed air; hence any sudden strain upon the cable, draws the sliding box, and moves the pistons backward in the air cylinders, when the condensed air producing an elastic resistance, allows the cable to give way for a short distance, without producing any extraordinary strain.

Plate IX. fig. 10, is a horizontal view of the apparatus, as fixed upon the deck of a vessel; fig. 11, is a vertical section of the same, the similar letters referring to the same parts in both figures; *a, a,* represent a portion of the chain cable; *b,* is the sliding box, which the cable is passed

through. This box is divided into several compartments, each of which are intended to receive one link of the chain; *c*, is a double slider, moved by a lever, *d*, which slider, when brought down upon the chain, confines its links; *e*, *e*, are flaps that fall down upon the chain, and also assist in wedging it fast to the box, *b*.

This box slides along the bottom plate in two rebates, *f*, *f*, and on the sides of the box, there are two ears, to which the piston rods, *g*, *g*, are made fast by screw nuts; *h*, *h*, are cylinders, in which the pistons, *i*, work. These cylinders are to be filled with air, through the stop-cock, *k*, and by means of a pump the air may be forced in and condensed to any desired pressure, so as to produce an elastic resistance against the piston, *i*.

Supposing the cable, *a*, to be attached at one end to an anchor, and made fast at the other end upon deck to the sliding box in the manner shewn, when any strain upon the cable takes place, the box, *b*, will be drawn along in the rebates, *f*, *f*, and the pistons, *i*, will also be made to slide back in their cylinders, when the condensed air in the cylinders will form an elastic resistance, which will take up the pull of the cable, and prevent it from being strained.

When the cable is to be released, and the anchor weighed, the sliders, *c*, are drawn up by means of the lever, *d*, and the falling flaps, *e*, *e*, are raised by shifting the slider, *l*, as in the fig. 11. The chain will then pass freely through the partitions of the box, and may be coiled upon the capstan as usual.

The patentee denominates this contrivance, an elastic stopper for releasing chain-cables, and which may also be applied to other cables if required.

[*Inrolled April*, 1825.]

To Charles Phillips, *of Upnor, in the Parish of Frindsbury, in the County of Kent, Esq. for his Invention of an Improvement or certain Improvements in the Construction of a Ship's Compass.*

[Sealed 18th June, 1825.]

The design of this invention is, in the first place, to prevent the injury which a steering compass sometimes sustains on shipboard by sudden concussions, such as firing cannon, or the striking of the paddles of steam vessels against the water, by which the floating card is subject to be thrown off its point of suspension, and the point itself to become injured; secondly, to regulate the vibrations of the floating box, by means of a circular weight, to be shifted according to the state of the weather.

The mode by which the first object is proposed to be effected, is by mounting the central point, which carries the card upon an elastic bearing. The manner of constructing this contrivance, is shewn in the section of a binacle compass, with its appendages in plate X. fig. 14.

a, *a*, is the circular box, which contains the compass, *b*, *b*, the floating card, *c*, the centre, or point on which the card is suspended, the lower part of this is a ball, or spherical piece, being upon an agate, or cornelian; the ball being secured by a cap piece; *d*, is the stem that supports the central point, and this stem passes through a collar, into the standard tube, *e*, in which there is a worm-spring, *f*, pressing upward, and supporting the stem, *d*. In the event of any sudden concussion, the

spring in the tube, *e*, allows the centre with the floating card to descend, and afterwards raises it again by its elasticity to the proper height, which is to be adjusted by altering the situation or height of the spring in the tube.

Near the bottom of the tube there are two long slots, with notches or bearings in their side, into these notches the handles of the moveable piece, *g*, which supports the spring, *f*, are placed, and by raising the piece, *g*, to the upper notch, or lowering it to the bottom notch, the upward force of the spring is increased or diminished.

The second contrivance, is the adaptation of a leaden ring, *h*, *h*, on the outside of the box, for the purpose of rendering the box more sensible to gravitation, and of consequence more steady during the rolling of the ship. This circular weight is attached by means of two palls, *i*, *i*, taking into ratchets, *k*, *k*, on the side of the box. By this contrivance it will be extremely easy to shift the situation of the leaden ring to the lowest part of the rack which is its proper situation in fine weather, or to the top of the rack in foul weather. The patentee considers that this circular weight might be suspended by chains instead of the racks and palls, but he prefers the mode above described.

A third feature of improvement is proposed, which applies to the *lubber* or steering point, *l*, placed on the side of the box, as a director to steer by. This is a pendulum vibrating upon an axle or pivot, at *m*, for the purpose of altering its situation according to the trim of the vessel; and it is proposed that this centre of suspension shall be made moveable by the piece which contains it sliding in a groove. The bob or weight, *n*, attached to the lower part of the pendulum, is also made adjustable in a similar manner.

The claims of invention under this patent, are therefore limited to the following heads, or, as it is termed, principles, the details of which are, of course, subject to variation; first, suspending the compass upon an elastic bearing, to avoid the ill effects of shocks; secondly, the adaptation of a gravitating weight or ring, to steady the compass, which is adjustable for all weathers; and, thirdly, the contrivance for regulating the lubber, or steering point, under similar circumstances.

[*Inrolled, December,* 1825.]

To SAMUEL PRATT, *of New Bond-street, in the County of Middlesex, Camp Equipage Manufacturer, for his Invention of an improved manner of combining Wood and Metal, so as to form Rails or Rods, adapted to the Manufacture of Bedsteads, Cornishes, and other Works where strength and lightness are desirable which he denominates Union or Compound Rods.*

[Sealed 14th May, 1825.]

THE object of the patentee is to construct slender rods, for articles of furniture, by a peculiar and ingenious method of combining wood and metal, in which combination he produces very considerable strength, with the appearance of extreme lightness.

These rods, rails, or other such slender articles, are to be made to the desired shape, in wood, and then the wood is to be split, or separated lengthwise into three pieces, and after having some portions of the interior of

the wood removed, by sawing or chiseling, a bar of iron, with three leaves, is to be introduced, and the three pieces of wood united again by glue or otherwise, with the three leaved bar enclosed within.

This will be more clearly understood by reference to the figures shewn in plate IX. in which fig. 6. represents the section of a rod prepared, ready to be operated upon. This rod is to be cut from end to end, into three pieces, in the direction of the dotted lines. After the wood has been thus separated, it is to be further cut away by a saw, chisel, or other instrument, leaving the recesses as seen at fig. 7.

A bar of iron having three leaves, as shewn in the section at fig. 8. is now to be provided and inserted into the recesses, and the wood being united again by glue or other means, with the three leaved bar enclosed within, constitutes the union or compound rod which forms the subject of this patent.

These three leaved bars of iron may be formed by swaging, hammering, rolling, or drawing, or by any other means that may be found most eligible, observing that cast metal will not answer the purpose so well as wrought.

It is in the contemplation of the patentee, sometimes to coat these rods with a cylinder of thin brass or other metal, which is to be drawn over the outside of the rod, by that means producing very considerable strength with lightness, and appearing like solid rods of metal. The section of such a combined rod, is shewn at fig. 9, the internal parts being constructed as above described.

No particular dimensions of breadth or thickness for the three leaved bars, are stated by the patentee, as they must necessarily vary according to the substance of the

rods, but the proportions shewn in the figures will be sufficient to give the idea. In this manner, wood and metal may be combined, and produce strong but light rods or rails, or other slender parts of furniture.

[*Inrolled November,* 1825.]

To Samuel Bagshaw, *of Newcastle-under-Line, in the County of Stafford, Gentleman, for his Invention of a new Method of Manufacting Pipes for the Conveyance of Water and other Fluids.*

[Sealed 8th August, 1825.]

His patent has two objects; first, to make pipes of clay by a particular process; and, secondly, to unite those pipes, so as to form lengths of any indefinite extent.

In the first instance, cylindrical plugs of wood are provided equal in diameter to the intended bore of the pipe, and of any suitable or convenient length; these plugs are to be coated on the outsides with soft clay, mixed up and laid on in the usual way of making pottery ware; a hollow cylindrical mould is then provided, consisting of two half cylinders, which when united and securely fastened together, forms the mould for the outside of the intended pipe; the cylindrical wooden plug, with the clay surrounding it, is then passed through the hollow mould, and being squeezed hard the superfluous matter becomes scraped off in its progress, and leaves the earthen pipe formed upon its plug. When this pipe has been dried, it may be readily drawn off the plug, and is then baked in the usual manner.

Two different sized pipes are thus to be made, the lesser pipes exactly fitted to pass freely through the inside of the larger. The lesser pipes being introduced into the larger, the space between them is to be filled with liquid cement of any kind, that is not subject to be effected by moisture, (Parker's cement is proposed,) and in thus uniting the pipes, care must be taken that the joints, or ends of the two inner pipes, are sufficiently covered by the outer pipes, or what is technically called blocking the joints.

[*Inrolled, October*, 1825.]

To JAMES DEYKIN, *and* WILLIAM HENRY DEYKIN, *of Birmingham, in the County of Warwick, Button Makers, for their new invented Improvement in the manufacture of certain Military, Naval, and other Uniform and Livery Buttons.*

[Sealed 23rd December, 1824.]

IT is stated by the patentees, that the ordinary mode of manufacturing buttons with devices upon their faces, is by first cutting the circular pieces or discs out of a thin plate of rolled metal, by means of a stamp, and then giving the impression in a coining press, by means of an engraved die on the top side, and a smooth plate at bottom. After this the shank of the button is attached to the under side of the disc by soldering, and in this operation, the great heat to which the button is submitted, causes a scale to be formed on the surface, which in being removed frequently injures the impression.

The improvement proposed by the patentees, consist in attaching the shank to the disc before the impression is given, by which means they avoid the injury that the face would be subject to from the action of the fire.

It is directed that the discs or circular pieces be cut out as usual, and then that the shanks (formed as heretofore), be affixed to the discs by solding or by a dovetail, as is the practice in making mother of pearl buttons. After this is done, the scale is to be removed from the face of the metal, by immersing it in a solution of acid, and the button, when gilt or plated, is to be placed in the coining press, and stamped as usual, the upper die having the engraved device, and the lower die being formed of two pieces which slide together, with a hole in the centre to admit the shank.

[*Inrolled, February,* 1825.]

To William Weston Young, *of Newton Nottage, in the County of Glamorgan, Engineer, for his Invention of certain Improvements in the Manufacture of Salt, part of which Improvements are applicable to other useful purposes.*

[Sealed 4th December, 1824.]

There are two objects proposed under this patent, the first is to place iron rafters and plates between the furnace and the under side of the boiler in which the salt is to be evaporated, in order to prevent the immediate action of the fire against the boiler, which, in the ordinary construction of salt pans, and their fire-places,

is very apt to burn the salt, and thereby injure both its quality and colour; the second object is to employ the steam evaporated from one salt pan to the heating of another salt pan placed above.

The plan proposed for the first object is so extremely simple and evident, that drawings are not necessary to illustrate it. Iron bars, as rafters, are to be placed over the furnace, and upon these are to be laid iron plates close beside each other, by which the immediate flame of the fire will be intercepted and prevented from acting upon the boiler, though the heat absorbed by the iron will be sufficiently transmitted to the under side of the pan to answer the purposes of evaporation.

The steam evolved from the pan as the brine evaporates is allowed to ascend in a confined chamber; and, as the second object of the invention, is to act against the under side of another salt pan placed above.

[*Inrolled, April,* 1825.]

It is rather extraordinary, that on the same day that this patent passed the Great Seal, a patent was also granted to William Furnival, of Anderton, in the county of Chester, for his invention of certain improvements in the manufacture of salt; and that the same object, viz.—causing the steam evolved from one salt pan to rise in a confined chamber, for the purpose of heating another pan above, is contained in both specifications, (see our present Volume, page 29.) In this case, neither of the patentees can be entitled to the exclusive use of the invention.

It is usual when two different parties are applying for patents having a similar object, that one or both of the parties takes out a caveat, to restrain the other from

obtaining his patent, in which case the matter is referred to the Attorney or Solicitor-General, who receives both parties in his chambers, and hears them separately, and in private describe their plans. If their inventions are dissimilar, (of which he is to be the judge,) though having the same ulterior object, he allows both patents to proceed; but if they are considered to be alike, he refuses the petition of both, and stops the progress of the patent, unless they agree to become joint patentees of the same invention.

There is, however, no register preserved of the respective inventions; and, therefore, under these circumstances, it is impossible to compel a patentee to specify the same subject which he had described previously to receiving his patent. Hence there have been instances of persons explaining before the Attorney or Solicitor-General a subject as their invention, and after obtaining their patent, specifying something totally different, which they had invented or picked up in the interim. There does not appear to be any existing remedy for this evil; and we beg, respectfully, to propose the consideration of the subject in the proper quarter.

EDITOR.

To PHILLIP CHELL, *of Earl's-court, Kensington, in the County of Middlesex, Esq. for his new invented Improvements on Machinery for Drawing, Roving, and Spinning Flax, Wool, Waste Silk, or other fibrous substances.*

[Sealed 14th October, 1824.]

THIS invention is stated to consist of a series of ma-

chinery, for the purpose of drawing, roving, and spinning flax, wool, waste silk, and other fibrous substances; but, in fact, it consists merely in the peculiar form of the drawing rollers, and the manner of disposing them.

The drawing rollers of such machines are usually placed in pairs, the upper roller bearing upon the lower, and retaining the filaments of whatever fibre is passed between them merely by its weight. The axles of these upper rollers turn in slots or open grooves in their carriages, and move round by the friction of the lower rollers, which are made to revolve by bevelled toothed wheels, actuated by pinions upon a transverse rotatory shaft, as seen at fig. 18, plate X.

Rollers with smooth surfaces are proposed, in order to avoid injuring the material, and the upper roller is to turn in a groove in the periphery of the lower roller, for the purpose of confining the substance, that the outer filaments may not be broken. A pair of these improved rollers are shewn in the front view, fig. 19; the enlarged diameter of the upper roller, *a*, falling into the groove of the lower roller, *b*.

Instead of placing these rollers in the machine in pairs, that is, the upper one immediately over the lower one, it is intended to make one upper roller, *a*, fig. 18, bear upon two lower rollers, *b*, *b*, the intention of which is, that the filaments of whatever material is operated upon may be held at two points. Or there may be two upper rollers, and three under rollers, which will have the same effect, the object being to employ rollers with smooth surfaces, and to hold the material at two points.

Though the operative parts of a machine for drawing flax, wool, &c. are shewn at fig. 18, yet the patentee does not claim any novelty in the mode of driving the

rollers of such a machine, they may be actuated in various ways. In this instance bevel pinions are placed upon the rotatory shaft, *c*, which take into bevel wheels at the ends of the axles of the lower drawing rollers; and these wheels and pinions having variable numbers of teeth, the rollers are consequently turned with different velocities, so as progressively to stretch or extend the filaments as they advance, which is the ordinary drawing process.

After the filaments have been drawn, that is, extended by passing through the series of drawing rollers, the slider is conducted over a guide-roller, *d*, and between the delivering rollers, *e*, down to a can, to be placed below, which is the ordinary mode of receiving the roving, previously to carrying it to the spinning machine; or instead of these delivering rollers, the sliver may be passed over a drum into the can.

A machine similarly constructed to the above with such kind of rollers as have been described, and so placed, one bearing upon two, is proposed to be employed for further reducing or refining the material; and the filaments from the last set of drawing rollers may be then taken up by a bobbin and flyer, which will be the first process of spinning called roving; or it may be received into what is called a lanthorn, if the operator prefers carrying it to the spinning frame without any twist. The same machinery may be applied to a spinning frame or to a mule.

[*Inrolled, April,* 1825.]

To George Dodd, *of St. Anne-street, Westminster, in the County of Middlesex, Engineer, for his Invention of certain Improvements on Fire-extinguishing Machinery.*

[Sealed, 21st October, 1824.]

The object of this invention is to direct the jet of water from a fire-extinguishing engine, to any particular part of an inaccessible apartment, as the hold of a ship, which might be so completely filled with smoke, as to prevent the possibility of any person remaining there, to point the branch to the spot where the fire was situated.

The plan proposed is to attach a nose piece, with a universal joint, to the end of the branch, and carrying the branch perpendicularly down through an aperture in the deck into the hold, then to direct the nose piece to the part desired, by means of a lever worked above.

Plate X. fig. 16, shews a section of the hold of a vessel taken crosswise; and fig. 17, is an enlarged representation of the improved apparatus detached. Let it be supposed that the part of the hold marked *a*, is on fire; this being discovered upon deck, an aperture is made through the deck at *b*, and the branch pipe from the engine inserted as shewn. The officer then points to the spot where the fire is situated, and the engineer turns round the apparatus, and moves the nose piece by means of a lever, so that the jet of water shall be directed to the spot desired.

The general outline of the plan being explained, the enlarged figure 17, will shew the apparatus in detail more perfectly; *c*, *c*, is the branch pipe of the engine,

attached to the hose by a universal joint, *d*, as usual, and to the lower end of the branch pipe the nose piece, *e*, is affixed, by means also of a universal joint. There is a ferrule with a flange, *f*, made to slide upon the branch pipe, which forms the bearing upon the deck, and the branch being passed down to the desired situation, is made fast by a screw in the ferrule. There is also another ferrule above sliding upon the pipe, to which a lever, *g*, is attached by a pivot joint, and to this lever the long rod, *h h*, is to be connected by a pin passed through one of its holes as at *i*. The lower end of the long rod, *h*, is jointed to the nose piece, *e*, and hence by raising the lever *g*, the nose piece and the jet of water becomes elevated, and it is intended that the end of the lever pointing forward, shall be a guide by which the jet may be directed towards any inaccessible point.

As it may be desirable to pass the branch pipe to different distances below the deck, the connecting joint is made to shift, so that when the lever has been lowered, it may be again connected to the long rod, by means of a pin or bolt passed through one of the holes shewn in the side of the rod.

Instead of the lever and rod being connected as above by the pin or bolt, two toothed wheels may be attached to the upper sliding ferrule, when the long rod being connected by a pivot joint to the lower wheel, and the lever to the upper wheel, the nose piece may be worked with a similar effect to that above described, the jet being guided in any required direction, by pointing the end of the lever to the spot where fire is situated.

[*Inrolled, April*, 1825.]

To Samuel Brown, *of Saville Row, Burlington Street, in the County of Middlesex, Commander in the Royal Navy, for his New Invented Apparatus for giving Motion to Vessels employed in inland Navigation.*

[Sealed 15th March, 1825.]

The patentee proposes to lay a chain or rope along the bottom of the canal or river, and having made it fast at both ends, to impel the boats or other vessels along by means of a wheel with indentations round its periphery, or a toothed or spur wheel, taking hold of the links of the chain.

The vessel containing the steam engine or other moving agent is to proceed first, and the other loaded boats or barges are to be attached behind in a train. At the bow, or the stern of the first boat, the indented or toothed wheel is to be placed, and the chain raised up by means of a grapple, and passed over the periphery of the wheel. Things being thus disposed, the engine is to cause the indented or toothed wheel to turn by means of a rigger and band or any other well known contrivance, when the teeth or indentations of the wheel taking into the links or acting against the shoulders of the chain, the vessel is progressively drawn forward.

The periphery of the wheel may be variously formed with cavities or indentations suited to hold the links, but it is proposed that its flanges or outer edges shall spread or be made bell shaped, in order to permit the chain to drop off freely after it has passed the actuating points. The chain is intended to rise up from the water at the fore part of the wheel, and after passing over the upper

part of its periphery, to drop down behind the wheel into the water again, without passing into or even touching the vessel.

The chain may be in one length from end to end of the canal or river, or it may be in many lengths, extending only from lock to lock, or to the different turns or angles of the canal or river; and one line of chain is intended to be sufficient for conducting the boats or barges both to and fro. When the boats meet in opposite directions, the towing boat on one side may throw off the chain from its wheel, and take it on again by means of a grapple, when the other train of boats have passed.

[*Inrolled July*, 1825.]

To JOHN FREDERICK SMITH, *of Dunstan Hall, in the Parish of Chesterfield, in the County of Derby, Esq. for his Invention of certain Improvements in the Preparation or Manufacture of Sliver, or Slivers, or Tops from Wool, or Wool and Cotton, or other suitable Fibrous Materials.*

[Sealed 11th January, 1825.]

THE operations of a carding engine, are to separate, comb out, and lay straight the filaments of wool, cotton, or other fibrous materials that may be passed through it, and the fine thin sheet of filaments produced by the operation, is technically called *sliver*. To those of our readers, who are not well acquainted with the construction of a carding engine, we refer to Buchanan's patent,

volume X. page 65, and plate III, as the specification now before us is not illustrated by any graphic figures.

The patentee having observed that warmth facilitates the operation of carding, (it having been practised for many years in combing wool,) proposes as a new invention, to heat the interior of the carding cylinder, by means of steam, and as wood is a bad conductor of heat, he proposes to make the carding cylinder of copper, which of course must be rendered steam-tight at the joints. Instead of setting the cards (wire brushes) in leather as usual, which would be soon destroyed by the heat, he proposes to fix the wires in block tin.

There are no particulars stated as to the construction of the cylinder, except that the steam is to be introduced "through a hollow axis in the ordinary mode used by engineers for supplying steam in such situations with a waste pipe, to conduct away such parts of the steam as may be condensed."

[*Inrolled July*, 1825.]

There have been within the last two or three years, several patents granted for the employment of heat, in the preparation of wool, cotton, and silk, two of which patents have already been annulled by writs of *scire facias*, the principle having been long known and in use.

EDITOR.

To JAMES HANMER BAKER, *of the Island of Antigua, but now residing in St. Martin's Lane, in the County of Middlesex, Gentleman, for his Invention of certain*

Improvements in the Arts of Dyeing, and Calico Printing, by the use and application of certain Vegetable material or materials.

[Sealed, 29th March, 1825.]

These improvements consist in employing the husk and shell of the cocoa nut, or the leaves, branches, and indeed every part of the cocoa nut tree, as a material from which a valuable dyeing matter may be extracted. The husk that encloses the nut and the footstalks of the leaves, are however, to be preferred both as being the cheapest and most convenient for use.

The husks and stalks are to be thoroughly dried in the sun, but previously it would be as well to slice them into thin pieces. The trunks and roots may also be split and dried.

If it should be found more desirable for the sake of transportation, the colouring matter may be extracted from the woody parts, by making an infusion in hot water, and then evaporating the water until the extract is brought to a paste, or to a dry state; care being taken that no vessel or article of iron be employed in the operation. Reducing the material however in this way, is not to be recommended, as the colouring matter by this process undergoes some changes, which considerably diminishes its utility.

The cocoa nut husk, or branches, or leaves of the tree, having been dried, are to be reduced to small pieces or powder, by crushing between rollers, grinding, rasping, or otherwise, and the colouring matter may then be extracted by infusion in hot or cold water, which may be assisted by the addition of lime, potash, ammonia, or other alkaline matters.

A wooden vat is to be filled with the materials, (husks or leaf stalks are to be preferred); and after covering

the vat with a frame to keep the material from rising, the vat is to be filled with water and allowed to remain in that state for two or three days, according to the warmth of the weather, in which time the water will have acquired a yellowish brown tint. It is then to be drawn off by opening a cock at bottom, and a second and third charge of water poured upon it in the same way, until the colour of the extract is so pale as to indicate that the material is spent. Another supply of the material is then necessary, and the same process is to be repeated.

With this extract, cotton, wool, hemp, flax, or silk, may be died a nankeen colour, by steeping in the liquor, the cotton, &c. having been previously cleansed and mordanted or not in the usual way, observing that none of the salts or preparations of iron are to be used. The mordant preferred for cotton goods is a solution of pure alum, neutralized by chalk.

This infusion, may be applied to printed goods, by having first covered those parts of a pattern intended to be white with any of the mixtures commonly employed as a guard. The cloth being then steeped in the liquor, will receive the tint, and may be afterwards cleaned in the usual way.

The extract may be obtained by boiling the materials above mentioned for an hour or more in any suitable vessel, such as is commonly employed by dyers, (iron excepted.) While scalding hot, the liquor will dye goods by merely dipping them in, and drying immediately; but the durability of the colour is much increased by previously passing the goods through an alum mordant. Another mode employed is to dip the goods in two or three times, drying them between, and then to raise the colour by a weak solution of muriate or

nitro-muriate of tin, or nitrate of lead, or in oxymuriate of lime; after which, they must be immediately well rinsed in cold water, otherwise the colour will be destroyed.

This dyeing material contains beside the colouring matter a considerable quantity of the substances called tannin and gallic acid; the infusion therefore, whether prepared in the cold or hot way, will give with any of the salts of iron a blue black colour, modified by the mordant. The salt of iron proposed to be employed is the common iron liquor of dyers, made by dissolving iron in pyro-ligneous acid, and in this case the extract from the cocoa-nut tree made in hot water with lime is to be preferred.

From the above extracts, by following the methods usually adopted by dyers, that is mixing astringent yellow and red colouring materials, olives, drabs, browns, greys, and a variety of other colours, of great beauty and durability, may be obtained; and in consequence of the quantity of tannin and gallic acid contained in the cocoa nut husk and leaf stalk, and indeed in every part of the tree, the infusion whether a hot or cold extract, may be employed as a substitute for nut galls or other astringent matter in dyeing turkey red and other colours.

The method of preparing infusions or extracts and compounds for dyers, as above described, are not new, therefore form no part of the patentee's claims, but his invention consists solely in using the "husk and shell of the cocoa nut, as well as of the whole and every part of the cocoa nut tree, as dyeing or tingeing materials, in whatsoever way the same may be applied or may be applicable to these purposes."

[*Inrolled September*, 1825.]

Original Communications.

To the Editor of the London Journal of Arts, &c.

SIR,

THE specification of my patent for Axletrees intended to remedy the extra friction of carriage wheels when passing along curves upon rail-roads, having been inrolled, and I presume about to appear in your Journal, I request permission to communicate to the public through your medium, a few observations relative to the inconvenience of friction, which carriages now in use labour under when proceeding along curves of the line of railway, which observation will I consider shew the necessity of an invention of the kind, and its usefulness.

Waggons that have hitherto been used are of such constructions that when passing curves in the rail-road (if the curve be not even more than two feet in twenty-two yards,) the friction is so great that it requires nearly double the power to propel the carriages that is necessary to produce the same speed on a straight line. It must therefore be evident that the extra power employed has the effect, merely of grinding and wearing away the waggon wheels and rails; various schemes have been put in practice to prevent these inconveniences, and each has proved ineffectual. Wheels have been used on

tram roads running loose upon fixed axles, but they have proved unsuccessful; for this reason, they cannot be kept steady, nor can they be prevented having play. I wish it to be understood, that there is a great difference between the edge rails and tram roads, the former being but two inches and a quarter broad, the latter from four to five inches. It must be known to engineers that wheels of a large diameter run with much less friction than those of a small diameter. It is my opinion that a carriage that is to travel at the rate of six miles an hour, ought not to have wheels of a less diameter than three feet. If it be wished to increase the speed of a waggon running on rail roads, it must be evident that increasing the size of the wheel will do it. Suppose we take it on an average that the wheels be four feet in diameter, as the speed for carrying goods and passengers is wished to equal that of the coaches; the play that will soon take place in the loose wheels, will allow them to vibrate and spread not less than one inch and a half, and it is well known that rail roads cannot be kept to that gauge, without sleepers or bearers extending from rail to rail, in order to bind the road together; and it will also require an extra number of men to keep the road in order.

Carriages with loose wheels are not at all calculated to rise and fall with the many irregularities of the road they must meet with, proceeding from various causes, such as the blocks being sunk, by the embankments giving way, &c. &c., as their axletrees must be firmly fixed to the body of their carriages. It will be doubtless the case that when the carriage meets with the hollow parts in the road, it will be resting on three wheels, and the fourth will most probably be lifted higher than the depth of its own flange, therefore, if the carriage be

travelling round a curve with the hollow inside, it must inevitably be thrown off the road.

In consequence of these inconveniences, loose wheels have been entirely abandoned on the edge rails, and those that are wedged firmly to a rotatory axle have been adopted, and appear to be far superior to the loose ones. In straight lines the waggons now in use may suffice, but when they meet with curves of six or eight feet to a chain, (or twenty-two yards) the friction that then takes place is enormous.

I can with confidence say, that the carriages above alluded to in passing these curves will at least grind off the top of the rail one-sixteenth of an inch in twelve months. The thickness of the top part of that kind of rails generally in use is only about half an inch, and those are on the most improved principle; therefore, it cannot be disputed when I say, that in four years the rails in these curves will be reduced below the standard strength required for the passing of the loaded waggons.

The enormous expense thus occasioned by this extra friction will be seriously felt by proprietors of rail roads; the malleable iron rail roads not having been long enough in use to prove to the public the real time they will last, and the disadvantages before named have not been yet fully ascertained by proprietors. The only malleable iron rail road that has been used for any length of time, is that which extends from Lord Carlisle's colliery to Brampton, in Cumberland, about ten miles in length, and has been made upwards of ten years. The straight line of rail road appears not to be much reduced, but the smallest curve lines have been replaced many years ago. From these circumstances I am led to believe that a

straight line of rail road, where there is a great traffic, will not last more than forty years; and those of sharp curve lines, not more than four, with the waggons now in use.

These disadvantages induced me to direct my attention to the constructing of a waggon that would obviate these difficulties, and the one I have made will, I doubt not, overcome them.

The wheels on my waggon are firmly wedged to the axle, and yet will roll round the sharpest curve without any additional friction from the sliding of the wheels. Carriages of the ordinary construction that travel on rail roads having one side more exposed to the heat of the sun than the other, must have their wheels soon worn to a smaller diameter, by their being exposed to a greater heat, as every practical scientific man knows, that wheels exposed to the south wear away much sooner than those exposed to the north; but the two wheels being wedged upon one axle, as in the carriage at present used, the friction will be much increased, even if the carriage be moving on a straight line, in consequence of the wheels that have not been worn travelling over a greater surface than the others.

Each wheel on my carriage is so adapted, that it will revolve with its own axle, and every wheel will travel over the surface required, either in a straight or curved line without any increase of friction, even though all of them should be of unequal diameter, (see the specification, page 169.) There are still many disadvantages not yet mentioned, which rail road carriages now in use labour under, for when they are lightly laden, and are moving at the rate of five or six mile per hour, and come in contact with sharp curves, they are generally thrown off the road; and should they be precipitated to the bot-

tom of the embankments, which are in some places fifty or sixty feet high, the consequences might prove dreadful, and the expenses great, for the carriages would doubtless be much injured. Suppose we conceive (which most likely would be the case,) that the waggon at that time would have many passengers, they must some of them, if not all, be killed upon the spot. My improved carriages will remove all the above named difficulties; and passengers may travel with the greatest safety.

These carriages have been tried before scientific men, and have answered beyond all expectation; they will not only move round curves with the same ease as on a straight line, but will travel over the hollow parts of the rail road that may have sunk, in consequence of the embankments having given way, with perfect safety.

I am, Sir,

Your's, &c.

ROBERT STEPHENSON.

To the Editor of the London Journal of Arts.

Sir,

Nothing appears to have been either more or longer overlooked and unimproved than the efficacy, necessity, and utility, of architectural ventilation. Sagacious ancients discovered indeed its useful effects, and ancient celebrated architects exerted efforts to introduce ventilation, on particular occasions; therefore, none need look far for records and proofs, that *ventilation* was always prized, when Vitruvius, Alberti, &c. flourished with immortal skill; yet no plain, perfect, and practicable means

ever appear to have been discovered to render ventilation generally, or rather systematically, useful to all sorts of buildings, without extra expence.

Such are the sole and simple objects of my *patent bricks*, viz:—to render air as subservient as possible to mankind, who have lived till this era, not without having acknowledged, but without having rendered air as beneficial as it is capable of being made towards the durability of their dwellings, notwithstanding we behold them now constructed with a display of every other art and elegance.

Accident and design have conspired to assist my present object, after having been attracted to the origin and prevention of premature decay (commonly but ridiculously called dry rot) in SHIPS, from which I was led after having fully succeeded (vide naval dry rot, &c. published in 1823,) to renew my attempts to prevent a similar complaint in HOUSES, &c. After I found all parties appeared to be agreed that air contributed towards the durability of timber, and in this opinion I became confirmed myself, on looking round upon various modern public buildings, where I saw different experiments had been made by admitting air at more than usual expence, by iron gratings, &c. but in a very ineffectual partial manner indeed. To such buildings I need not refer on this occasion. To remove all doubts of the value and importance of simple ventilation in preference to all the costly and silly nostrums and notions that have latterly existed, in particular by many patentees, who fancied they had discovered the philosopher's stone.

I refer then, at once, to *Westminster Hall*, built above 700 years ago, where air has always freely circulated during seven centuries, and where the roof and timbers remain apparently as solid as when erected. One plain ocular proof exceeds millions of arguments.

We have numberless proofs of the demolition of valuable modern houses, although most carefully, aud expensively built, viz:—the house of Messrs. Jones, Loyd, and Co., near the Bank of England; Messrs. Clarkson, and Sons, Doctors' Commons, whose houses were only six years old, and many others that might be mentioned.

The most valuable treatise on dry rot, appears published lately, by Robert. M'William, architect, of Furnival's Inn, Holborn, (which building is now greatly affected by dry rot, although lately erected,) whose opinions I found most positively corroborated my own, and as I am neither a professed architect or engineer, but a merchant, acquainted with the timber trade, I conceive it but justice to refer to the book itself, and to make a few extracts relative to the question under discussion, which is of far greater consequence than generally imagined—yet Mr. M'William, labours under some mistakes which it is irrelevant to notify here.

"It is a lamentable fact, that a hope is still entertained of discovering some *nostrum*, the application of which will exterminate the whole disease—a notion only calculated to prevent the adoption of effective remedies.

"It is of the first importance that, in all cases, edifices be constructed in such manner as to admit of the common air shifting its place with facility.

"The dry rot proceeds very fast at 50° Fahr:—it may be generated at 40, its progress will be slow at 36, and is arrested at 32, but no degree of cold will destroy its corrupting principle, and prevent its return, after the temperature is raised to 45, or 50°."

We have Vitruvius and Albertis' examples, (3rd book, chap. 6;) to leave open spaces through walls of dwellings, &c. from tops to bottoms, through which vapours

may escape. The church of St. Mark, at Venice, is built on similar principles. "If walls be properly built and kept dry, so that the ends of the timber that must necessarily rest on them, be not exposed to any constant or periodical supply of moisture; if the whole building, particularly the basement, be kept dry by proper drainage, and if *pure air* be allowed to circulate between the joists and through the floors in *moderate* degrees, it is not necessary that a great deal of air should be admitted, so as to become disagreeable to the inhabitants, and the purer the *air*, the smaller portion is sufficient."

I might refer to several other eminent architects, Messrs. Soane, Elmes, &c. but I conclude it is quite superfluous.

I hope these historical and brief observations will prove acceptable, whenever you report my patent bricks in your Journal,* to which I beg leave to subjoin a few more, which may assist to illustrate your drawing or descriptions of my bricks, viz:—

They are manufactured and manufacturable *without any extra expence*—they all consist of various solid shapes; the bottoms, corners, edges, ends, and sides are varied so as to admit and turn currents of air in all possible directions round wood work resting in walls, by which several objects are accomplished, that appear hitherto to have prevented ventilation from becoming as practically useful, as I have already shown it has always been theoretically considered by all classes of professors at all times.

1st, Air is thereby externally and internally directed partly or quite through brick walls, round beams, joists, wall plates, bond timbers, &c.; 2nd, the usual *strength* is preserved by *the bonds* remaining as usual in masonry.

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* See page 172.

3rd, Either *external* or *internal* ventilation, or both may be adopted at the discretion of builders—but let the proprietors remember, that no company yet exists to assure against *dry rot*, which generally (like fire) ends by demolition.

Let it also be well understood, that I do not pretend to prevent dry rot, alias premature decay, either in *old ships* or *old houses*. My system applies exclusively to NEW buildings, and I conceive, that dry rot is equally incurable as mortification, if deeply rooted.

A house with *five* stories elevation, will only require *six* courses of ventilating bricks, viz:—one course to ventilate the basement floor, one between the ceilings and floors, and one to ventilate the roof; in other and perhaps plainer words, each story will require one course of ventilating bricks, admitting air to circulate between floors and ceilings, by pure but moderate currents backwards and forwards, and lest any groundless apprehensions may be entertained as to rendering dwellings cold and chilly in winter; it may be right to explain, that the apertures need not be much larger than PEAS—the smallest portion of air supports human life, and the smallest portion will undoubtedly on the present occasion answer the important objects in contemplation, without any risk whatever, particularly as the *external* part of the ventilating could always be stopped up at little expence after timbers are seasoned.

The bricks are, at all events, unobjectionable in the construction of *public buildings*, churches, barracks, manufactories, &c. &c. and where any unhealthy trades are practised.

An anomaly has crept into *modern architecture* by the fatal practice of using oak, felled at *bark harvest*, instead of winter—a practice contrary to all experience in

all ages. Saps are the seeds of dry rot, and with such materials it is useless to build solid walls, or expect durability, like ancient cathedrals and castles, erected when men generally wore *sandals*, and bark was of little value to tan leather.

Fir timber imported is always hewn in *winter*, but is subject to premature decay, under the present novel system of architecture, as we behold immense rafts of timber floating in the Thames one week, which, perhaps, in the next are sawed, and worked into fine buildings, and speedily plaistered over and altogether excluded from air, while *full of moisture.* Dry rot is the *natural* consequence of such a *hasty*, preposterous system, which the proprietors, and not the architects, generally pay for, or the system could never have prevailed, which is so ruinous to owners, but "GOOD FOR TRADE," as it is called.

I hope these remarks will not be deemed useless, though I have already published several volumes upon dry rot and ventilation, I will not therefore trespass further; but I conceive the whole nature of the matter of my improvement might remain undefined and undefinable without this explanation. However, my models yield the best illustration of the practicability and importance of my patent bricks, which are made by common workmen as usual, and have met the approbation of several respectable architects in the metropolis, to whom I have exhibited them, which are open to the inspection of any other gentleman.

I remain, Sir,

Your's, &c.

JOHN BURRIDGE.

Bennet-street, Blackfriars Road.

Polytechnic and Scientific Intelligence.

LONDON ASTRONOMICAL SOCIETY.

(*Continued from page* 49.)

Jan. 13, 1826.—There was read a paper by Stephen Groombridge, Esq., F.R.S., on the co-latitude of his observatory at Blackheath, as determined from his own observations. The author first describes a simple method of bringing the transit-instrument into the meridian, by the observations of Polaris and other circumpolar stars, and then by comparisons of high and low stars. He next describes the method of ascertaining the true zenith point, and thence the elevation of the pole, by observations of circumpolar stars in zenith-distance above and below the pole, from which twice the co-latitude becomes known. Employing his own constant of refraction, he obtains from observations of 32 circumpolar stars above and below the pole 77° 3′ 55″ ,65 for the mean double co-latitude; thence 38° 31′ 57″ ,82, and 51° 28′ 2″, 18 for the latitude; a result which accords with his independent observations on the solstices.

Mr. Groombridge next proceeds to deduce from this, the co-latitude of the Royal Observatory. He determines the difference of the zeniths of the two observatories at 35″,25, which applied to the latitude of the Blackheath Observatory, by addition, gives 51° 28′ 37″,43 for that of the Royal Observatory, being less than Mr. Pond makes it by more than a second. Mr. Groombridge imputes the difference to an erroneous constant of refraction. The author concludes his paper, by presenting some simple formulæ for finding the position of a transit instrument, from the observed transits of a high and low

star, passing the meridian to the south of the zenith; or from the observed transit of a circumpolar star above and below the pole.

There was next read a communication, from Sir Thomas Brisbane, dated Paramatta, 2d July, 1825. The contents were, 1st, Observations with a repeating circle for the winter solstice 1825, extending from June 12th, to July 1st, inclusive. These are not yet reduced. 2dly, Observations on the inferior conjunction of Venus and the Sun, May 1825, with the mural circle, from May 1st to the 25th inclusive. 3dly, Observations on the dip of the magnetic needle, March 1825; —the mean of the whole is 62° 41′ 35″. 4thly, Observations on the declination of the needle in March, April, and May, 1825;—the mean of the whole is 8° 59′ 48″. Lastly, An abstract of the meteorological journal kept at Paramatta, from April 1824 to April 1825.

Feb. 10.—The Sixth Annual General Meeting of the Society, was this day held at the Society's rooms in Lincoln's Inn Fields, for the purpose of receiving the Report of the Council upon the state of the Society's affairs, electing Officers for the ensuing year, &c. &c.

The President, F. Baily, Esq. in the chair.

From the Report, which was read by Dr. Gregory, we give the following extracts.

"In meeting the Astronomical Society of London at its Sixth Anniversary, the Council have great pleasure in being enabled still to use the language of cordial congratulation: for not only does the number of the Members and Associates of the Society continue to increase, and its affairs to prosper; but also the theory and practice of Astronomy (the extension of which was the sole object of the Society) have both been obviously promoted by the zeal and talent of many of its Members and friends."

The Report proceeds to state that "in 1822, the

Members and Associates amounted to 188; in 1823, to 207; in 1824, to 210; in 1825, to 224; in February 1826, to 237; a number, in which are included several of the most eminent promoters of Astronomy, not only in Britain but in Europe.

"Amongst the few Members of whom the Society has been deprived by death, the Council think it proper to call your attention to the loss of Mr. Cary. As an artist of considerable eminence and high reputation he was well known in the scientific world. Amongst the many excellent instruments which he contrived and perfected, he was the maker of the 2½-feet Altitude and Azimuth Instrument at Konigsberg, with which M. Bessel made his first observations at that celebrated Observatory.

"Among the duties, which it has devolved upon your Council to discharge, one of the most interesting has been the selection of papers (read at the ordinary Meetings) for publication in the volumes of the Memoirs of the Society. The Second Part of the First Volume, which was nearly ready for delivery at the Anniversary Meeting of 1825, was shortly afterwards laid before the public, and has been well received by Astronomers.—The First Part of the Second Volume is now nearly ready for publication; and the Council trust that it will experience an equally favourable reception. Besides several valuable papers tending to improve the theory of Astronomy and of astronomical instruments, and others describing instruments, which are entirely new; the several parts, here alluded to, contain tables, which tend very much to facilitate the labours of the practical Astronomer. Thus the second part of Vol. I. terminates with subsidiary Tables facilitating the computation of annual tables of the apparent places of 46 principal fixed stars, computed by order of the Council; to which is prefixed a statement by the Foreign Secretary of the formulæ employed and

the elements adopted in their construction. These tables with their introduction occupy 76 pages.

"The Tables of precession, aberration, and nutation, serving to determine the apparent places of about 3000 principal fixed stars, to which allusion was made in the last Report of the Council, have been completed to 180° of A.R. and written out for the press. The remainder are in a state of considerable forwardness. These tables, together with an ample introductory paper on their construction and use, by the President of this Society, will constitute an appendix to the second volume of the Memoirs.

"Amongst the numerous communications which have been made from the Associates of this Society, the Council may specify a very interesting and elaborate paper, forwarded to the Foreign Secretary by M. Plana, on some important inquiries in physical Astronomy, which will be found in the second part of the second volume. The President also has received a letter from M. Bessel, requesting to know whether the Astronomical Society would patronize and promote a plan, which he had suggested, for making detached charts of the heavens. The President was requested by the Council to assure M. Bessel that the Astronomical Society would doubtless promote so laudable and useful a measure, as much as lay in their power. That active and indefatigable astronomer, pursuant to his general plan, now regularly observes all the smaller stars in zones, agreeably to the method suggested, and practised by the late Rev. F. Wollaston. He has already completed the zones, within 15° on each side of the equator; and in that space has observed upwards of 30,000 stars. The observations are annually published by M. Bessel, with the other observations made at the Royal Observatory at Konigsberg. When they are reduced (as there is great reason to hope

they will be), they will constitute a most valuable accession to the stores of Astronomy.

"The instrument made use of in this survey of the heavens, as well as that used by Mr. Wollaston, were both made by the late Mr. Cary.

"Others of the Associates have especially distinguished themselves, and have forwarded to this Society some very interesting communications, as the successive parts and volumes of the Memoirs will evince. In alluding to these distinguished characters, your Council cannot avoid noticing the indefatigable labours of M. Schumacher, Professor of Astronomy at Copenhagen. His *Astronomische Nachrichten*, or Astronomical Newspaper, has considerably facilitated the intercourse between Astronomers in every part of the world; serving to record the observations of various interesting phænomena, as well as to draw the attention of observers to other phænomena about to appear. He has also published several compendious collections of tables of great practical utility. Among these, your Council cannot omit a particular reference to the very important Tables, which constitute the second part of his *Sammlung von Hülfstafeln*, and which have been prepared for the purpose of reducing the 50,000 stars contained in Lalande's *Histoire Céleste*; serving, indeed, to effect the reduction of any one of those stars in the short space of two or three minutes.

"Thus, whilst M. Schumacher has laid all Astronomers under considerable obligations by the publication of these tables, he has conferred a peculiar mark of his esteem upon the body now assembled, by dedicating this volume to the Astronomical Society; a distinction, which they, who know the talent and zeal of this our eminent Associate, will be able to appreciate in an adequate manner.

"One of our Associates, M. Struve, has devoted him-

self with great perseverance and success to the observation, and classification, of double stars; an important department of astronomical research, which was originally opened and pursued with his wonted assiduity and accuracy by our late revered president, Sir William Herschel.

"This subject has been still more extensively pursued, and with considerable ardour and zeal, by two of our Members, Messrs. Herschel and South; whose labours on this very interesting branch of the science are contained in a paper read before the Royal Society, and which in itself forms the third part of the Philosophical Transactions for the Year 1824. Whoever has read that paper with attention, must be struck with the vast labour and perseverance, the great accuracy and uniformity of result, with which those delicate observations have been made. Such an immense mass of interesting facts cannot fail to open new views to the contemplative philosopher, and extend our knowledge of the true system of the universe: and Mr. Herschel himself has, in a communication about to be laid before the Royal Society, made a happy application thereof, as explanatory of some of the phænomena connected with parallax. The indefatigable ardour of Mr. South in the cause of Astronomy, induced him to follow up his researches on the same subject whilst he was in France; and he has recently made a communication to the Royal Society, of some new observations, of equal, if not superior, importance; and which will appear in a subsequent volume of the Philosophical Transactions.

"For these laborious and valuable researches and observations relative to double stars, the Council have awarded to each of those distinguished Members and Associates, Mr. Herschel, Mr. South, and M. Struve, the Gold Medal of the Society, which will be presented

to them at a General Meeting expressly called for that purpose, as soon as the medals can be prepared.

"Sir Thomas Brisbane, Governor of New South Wales, has devoted himself indefatigably to the practice of Astronomy, at Paramatta in that colony, having taken out with him some excellent instruments for that purpose. He and his assistants have already made several thousand observations, the records of which have been sent over to this country: and it is hoped that they will be published, either in their original shape, or after they have been reduced to some appropriate epoch. Dr. Brinkley, of Dublin, one of the Vice-Presidents of this Society, has instituted a series of computations on Sir Thomas Brisbane's Observations, with a view to the comparison of the results thus furnished, with the results deduced from observations made in the northern hemisphere. This particular inquiry has served to confirm the accuracy of the constant of refraction, formerly exhibited by that illustrious astronomer in his well-known formula for that species of reduction. Dr. Brinkley's paper on this subject is printed, and will appear in Part I. Vol. 2, of the Memoirs of this Society.

"Another of the Members of the Astronomical Society, the Rev. Fearon Fallows, Astronomer at the Cape of Good Hope, has also made a great number of Observations of the southern stars; and the Royal Society has published his Approximate Catalogue of 273 of the principal stars observed by La Caille.

"The continuance of Observations, such as these, at two Observatories in the southern hemisphere, cannot but be productive of considerable benefit to the science of Astronomy. In order, however, that they may be rendered subservient in the highest degree, to the extension of this branch of knowledge, it is especially desirable that some efficient plan of co-operation should be

arranged between the Astronomers at some of the northern Observatories, and those who are employed at the two above-mentioned stations, south of the equator. Those who are conversant with the history of Astronomy will recollect that when La Caille went to the Cape of Good Hope in 1751, he addressed a circular letter to the principal Astronomers in Europe, enforcing the advantages of co-operation, and Lalande was in consequence sent to Berlin, to act in concert with him. Circumstances are now still more favourable for the production of advantageous results, provided a judicious plan of mutual co-operation be agreed upon. For while there is the Observatory established by Sir Thomas Brisbane in New South Wales, and that occupied by Mr. Fallows at the Cape; there are also in the northern hemisphere, M. Bessel at Konigsberg, M. Struve at Dorpat, and M. Argelander at Abö (the meridians of the four latter-mentioned places differing from each other but a very few degrees,) the respective Astronomers, men of considerable science, activity, and perseverance, and possessing instruments far superior to those which were in existence in the time of La Caille. The advantages of this kind of pre-arranged co-operation, to which your Council here advert, are so well understood in the present advanced state of Astronomy, that a mere hint will, (it is hoped) suffice, to produce the desired concert."

The Report then adverts to the contributions and exertions of other scientific bodies. "The erection of an Observatory at the University of Cambridge, and the still more recent announcement of a prize of £75 at Edinburgh, to be awarded to the two best essays on Comets,* cannot but be hailed as of auspicious tendency

* Open to all students who have attended that University during the last ten years.

in the development of knowledge. In the same light, too, may doubtless be considered the determination of the British Board of Longitude, to employ adequate computers on the reduction of Mr. Groombridge's Observations at Blackheath, as well as to devote a part of the funds, which are at its disposal, to the arrangement and publication of the Observations of Tobias Mayer (so justly celebrated for their importance and accuracy) from the original manuscripts, which have been forwarded to this country for that express purpose.

"As another subject of congratulation, the Council cannot avoid noticing the interest which appears recently to have been excited in the United States of America to the subject of Astronomy. On the opening of the present Session of Congress, the President pointed out to them the propriety and advantage of constructing Observatories in various parts of their immense territory, and of establishing a system of co-operation between each other. A plan of this kind, under the direction of active and skilful Astronomers, cannot fail to advance the science, and is worthy of the patronage and protection of a great and powerful nation.

"No less than five comets were discovered within the compass of as many months in the last year, and one of these has (as it was predicted) been seen again within the last fortnight. This is a natural result of the augmented attention which has been lately paid to these bodies, and to the investigation of the laws which their motions obey.

"With respect to the Prize Questions proposed at the last general meeting of the Society, the Council report that they have received only one answer to the first question, which being just delivered in, is now under investigation. The period allotted for the determination of the second question will not expire till the next Anniver-

sary, and that allotted for the third question not till the Anniversary in 1828; prior to which time the Council trust that the subjects proposed will have excited the attention of Astronomers, and induced them to forward to the Society the result of their inquiries and investigations.

"It has frequently been a subject of regret with many Members of this Society, that there are so few particulars known relative to the different public Observatories in various parts of the world: such as the construction of the building, and the instruments with which it is furnished. The celebrated John Bernouilli in his *Lettres Astronomiques*, published at Berlin in 1771, attempted a description of some of those, which he had visited: but so many alterations have taken place since that period, not only in the Observatories themselves, (some of which no longer exist,) but also in the instruments, which are now of a totally new character, that but little information as to the present state of those establishments can be obtained from that source. The Council are of opinion that it would tend materially to the advancement of Astronomy, if an accurate description of every principal Observatory could be obtained, accompanied with a ground plan and elevation of the building; together with a description of the instruments employed, and drawings of such as are remarkable, either for their novelty or peculiar interest. It is well known that there are several instruments in constant use on the Continent, and much approved by Astronomers, which have not yet been seen in this country: and some in this country, which are not sufficiently known abroad; or even amongst ourselves. The Council would encourage every attempt to promote this species of information, by publishing in their Memoirs the accounts which they may from time to time receive on this subject, and the drawings, with which they might be accompanied.

"Your Council think it unnecessary to extend this Report to a greater length. It must be evident that many things, which (as far as regard the objects and labours of this Society) were six years ago only matters of hope and anticipation, have now become subjects of mutual congratulation. But it can only be by a cordial and zealous co-operation of all its Members, and by a continued course of perseverance, that the Society can ever expect fully to attain the principal objects for which it was established; and which, as stated in their original Address, are for the purpose of 'collecting, reducing, and 'publishing useful Observations and Tables:—for setting 'on foot a minute and systematic examination of the 'Heavens:—for encouraging a general spirit of inquiry 'in practical Astronomy:—for establishing communica-'tions with foreign Observers:—for circulating Notices 'of all remarkable Phænomena about to happen:—for 'enabling the public to compare the merits of different 'artists, eminent in the construction of astronomical 'instruments:—for proposing Prizes for the improve-'ments of particular departments, and bestowing Medals 'or rewards on successful research in all:—and finally, 'for acting, as far as possible, in concert with every 'Institution both in England and abroad, whose objects 'have any thing in common with their own; but avoid-'ing all interference with the objects and interests of 'established scientific bodies.' Keeping these objects in view, as constant land marks, the Council trust that the Society will insure the approbation and applause of every friend of science; and that it will not only prove a source of interest and information to the Members at large, but likewise tend to advance the progress of Astronomy in every habitable and civilized part of the globe."

New Patents Sealed, 1826.

To James Fraser, of Houndsditch, in the City of London, engineer, for his invention of an improved method of Capstans and Windlasses—Sealed 25th February—2 months,

To Benjamin Newmarch, of Cheltenham, in the county of Gloucester, gentleman, for certain inventions to preserve vessels, and other bodies, from the dangerous effects of external or internal violence on land or water, and other improvements connected with the same—25th February—6 months.

To Benjamin Newmarch, of Cheltenham, in the county of Gloucester, gentleman, for his having discovered a preparation, to be used either in solution or otherwise, for preventing decay in timber or other substances, arising from dry rot or other causes—25th February—6 months.

To James Fraser, of Houndsditch, in the city of London, engineer, for his invention of a new and improved method of distilling and rectifying spirits and strong waters—4th March—2 months.

To Robert Midgley, of Horsforth, near Leeds, in the county of York, gentleman, for his invention of a method, machinery, or apparatus for conveying persons and goods over or across rivers or other waters, and over valleys or other places—4th March—6 months.

To George Anderton, of Chickheaton, in the county of York, worsted spinner, for his invention of certain improvements in the combing or dressing of wool and waste silk—4th March—2 months.

To James Neville, of New Walk, Shad Thames, in the county of Surrey, engineer, for his invention and discovery of a new and improved boiler, or apparatus for generating steam, with less expenditure of fuel—14th March—6 months.

To Nicholas Hegesippe Maniclor, of Great Guildford-street, Southwark, in the county of Surrey, chemist, for his invention of a new preparation of fatty substances, and the application thereof to the purposes of affording light —20th March—6 months.

CELESTIAL PHENOMENA, FOR APRIL, 1826.

D.	H.	M.	S.	
1	3	0	0	♀ in conj. with ζ in Pisces
6	14	10	44	♃'s 1st Sat. will emerge.
6	21	26	0	Ecliptic Conjunction or ● New Moon.
8	3	0	0	♀ in conj. with ο in Pisces.
8	8	39	19	♃'s 1st Sat. will emerge.
8	13	0	0	☽ in conj. with ☿ long. 6° in Taurus ☽ lat. 2° 22′ N. ☿ lat. 2° 55′ N. dif. lat. 33′
9	13	0	0	☽ in conj. with δ in Aries.
10	14	0	0	☽ in conj. with A in Tau.
11	0	0	0	☽ in conj. with 2 κ in Tau.
11	18	0	0	☽ in conj. with ι in Taurus.
12	1	0	0	☽ in conj. with ♄ long. 17° in Gemini ☽ lat. 1° 17′ S. ♄ lat. 1° 9′ S. diff. lat. 8′
12	10	0	0	☽ in conj with ζ in Taurus.
13	0	0	0	☿ Stationary
13	9	0	0	☽ in conj with ν in Gem.
15	0	58	0	☽ in □ first quarter.
15	10	33	42	♃'s 1st Sat. will emerge.
16	5	0	0	☽ in conj. with 1 α in Can.
16	7	0	0	☽ in conj with 2 α in Can.
20	3	43	0	☉ enters Taurus.
21	5	0	0	☽ in conj. with i in Virgo.
21	19	26	0	Ecliptic opposition or ○ full moon.
22	12	28	9	♃'s 1st Sat. will emerge.
23	9	0	0	☾ in conj with η in Libra.
23	13	0	0	☾ in conj. with λ in Libra.
23	18	0	0	☾ in conj. with 1 β in Scor.
23	18	0	0	☾ in conj. with 2 β in Scor.
24	23	0	0	☾ in conj. with ϛ in Oph.
25	19	0	0	☾ in conj. wtth 1 μ in Sag.
25	20	0	0	☾ in conj. with 2 μ in Sag.
26	21	0	0	☾ in conj. with *d* in Sagit.
28	0	0	0	♅ Stationary.
28	1	0	0	☾ in conj with β in Cap.
28	13	3	0	☾ in □ last quarter.

The waxing ☽ moon—the waning ☾ moon.

Rotherhithe. J. LEWTHWAITE.

1826.	Thermo.		Barometer.		Rain in inches.	1826.	Thermo.		Barometer.		Rain in inches.
	Higt.	Low	+	—			Higt.	Low.	+	—	
Feb.						Mar.					
25	54	40	30,00	29,92		11	52	39	30,26	30,22	
26	47	33	30,34	30,25		12	50	28,5	30,36	30,33	
27	52	37	30,22	30,00		13	48	31	30,36	30,22	
28	56	39	30,10	30,09	,075	14	50	33	29,95	29,90	,125
Mar.						15	51	36	29,80	Station	,075
1	53	42	30,00	29,84		16	46	27	30,25	30,04	
2	53	45	29,70	29,67		17	46	25	30,30	30,28	
3	50	42	29,78	29,60	,65	18	48	24,5	30,18	29,97	
4	54	35	29,70	29,54	,175	19	48	35	29,85	29,80	,025
5	51	36	29,95	29,74	,075	20	45	33	29,90	station	,125
6	48	28	30,05	29,80	,075	21	49	34	29,90	station	
7	56	45	29,80	29,76	,25	22	43	35	29,80	29,70	
8	59	47	29,99	29,97	,1	23	40	35	29,60	29,50	
9	65	37	30,16	30,00		24	39	31	29,67	29,40	
10	64	38	30,27	30,20		25	44	32	29,67	station.	,325

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37′ 32″ N. Long. 0° 3′ 51″ W. from Greenwich.

METEOROLOGICAL JOURNAL, February and March, 1826.

1826.	Thermo.		Barometer.		Wind.	Weather.
	Max.	Min.	Morn.	Even.		
Feb.						
22	52	45	29,74	29,72	S. W.	Rain ½ inches and brisk wind.
23	44	36	29,70	29,75	W.	Cloudy—slight showers, hail & rain.
24	46	34	29,91	29,82	N. W.—W.	Frost, morning—rain ⅛ inchs. night.
25	55	40	29,80	29,93	W.—N. W.	Fair—mild—brisk wind.
26	51	38	30,12	30,18	N. W.	Fair—clear.
27	50	41	30,08	29,90	N. W.—W.	Cloudy—high wind - slight showers.
28	52	43	29,95	29,97	W.	Ditto—ditto.
Mar.						
1	51	45	29,86	29,70	W.—S. W.	Ditto—ditto, damp.
2	50	47	29,61	29,57	S. W.	Rain 1 ½ inches.
3	50	41	29,52	29,65	W.—N.	Rain—cloudy.
4	54	44	29,51	29,58	S. W.	Rain ¼ inches.
5	54	38	29,64	29,91	W.—N. W.	Ditto $\frac{1}{16}$ inches and wind.
6	46	36	29,94	29,63	N.W.—S.W.—S.	Do. ¼ in.—wind, fog and slight frost.
7	54	48	29,63	29,80	W.	Cloudy—slight rain and wind.
8	55	48	29,87	29,87	S.	Ditto—rain $\frac{3}{16}$ inches.
9	60	49	29,98	30,10	S.	Fair—cloudy—sultry.
10	67	48	30,13	30,14	S. W.—S.	Fair—clear.
11	55	43	30,12	30,17	S. E.	Ditto—ditto, cold wind.
12	56	36	30,26	30,27	S. E.	Ditto—ditto, frosty morning.
13	51	34	29,25	29,16	E.	Ditto—ditto, ditto, cold wind.
14	51	36	29,84	29,78	S. W.	Ditto—ditto, shower
15	52	38	29,73	29,83	N. W.	Ditto—ditto,
16	46	36	29,99	30,15	N. E.	Fair—cloudy—cold wind
17	46	30	30,18	30,12	N. E.—N. W.	Frost—fair—clear.
18	51	32	30,05	29,80	N.—W.	Ditto—ditto.
19	50	38	29,75	29,83	N. W.	Stormy —wind and showers.
20	46	36	29,82	29,81	N.	Ditto—ditto—ditto—hail.
21	46	37	29,84	29,80	N. E.	Cloudy—cold wind.
22	42	37	29,74	29,64	N. E.	Ditto—ditto—small rain.
23	38	36	29,51	29,32	N. E.—N.	Snow and rain ¼ inches.
24	39	35	29,36	29,52	N. E.—N.	Cloudy—damp.

HITCHEN, HERTS. W. PERKS.

Lat. 51° 56′ 20″ N. Long. 0° 16′ 30″ W. from Greenwich.

LITERARY AND SCIENTIFIC NOTICES.

M. Tholuck, the oriental professor of the University of Berlin, has recently published a series of curious details, derived from Arabic, Persian, and Turkish manuscripts; which will be of great use in future inquiries into the history and condition of the eastern parts of the world, and in illustrating the mystic oriental anthology.

African Travellers.—From the Sierra-Leone Gazettes; we learn that Captains, Clapperton and Pearce, and Messrs. Morrison and Dickson, have sailed in the Brazen, for the Bights of Benin, and Biara, where it is their intention to land, to prosecute their interesting enquiries.

It is with considerable pleasure we learn, that Baily's beautiful statue of Eve, has been purchased by some spirited gentleman at Bristol, who upon hearing that the sculptor meditated sending it to the Continent, resolved that the country should not suffer under the imputation of having neglected so admirable a specimen of the arts.

A work is announced to appear in parts, entitled the History, Antiquities, and Topography of the Town and Borough of Southwark; the authors of the above, are Ralph Lindsay, Esq., late Deputy Bailiff of Southwark, and Mr. Allen, author of the History of Lambeth; it is supposed, that it will be contained in about twelve parts; the first of which will appear in as short a period as the nature of the work will admit of.

Bergen.—A Museum of Natural Antiquities, and a Cabinet of Natural History, are about to be established at Bergen. It is to be formed on the basis of similar establishments, in the various countries of Europe; and will no doubt prove very interesting, not only to the Norwegians, but to the learned and scientific of all nations.

The Rev. A. S. Burgess, is preparing for the press, a volume, entitled, "Worthies of Christ's Hospital, or Memoirs of Eminent Blues."

The eighteenth part of Lodge's Portraits has been published, equal in every point of view to those that have preceded it, and worthy of the same ample praise. It contains Elizabeth Queen of Bohemia, daughter of James I. whose London residence was at the bottom of Drury Lane, a quarter of the town which has since fallen off in fashion most egregiously. The next portrait is that of Ambrose Dudley, Earl of Warwick. The third, William Herbert, Earl of Pembroke, (from Vandyke); the fourth, Henry Earl of Southampton, (from Mirevelt); and the last, William Seymour, first Marquis of Hertford; all of which are executed in the highest style of excellence, and the accompanying memoirs written with considerable taste.

Sir Andrew Halliday, M. D. has in the press the Annals of the House of Brunswick, which will be illustrated with an engraving from Mr. Chantry's Bust of his present Majesty, by Reynolds, and thirteen portraits of the most distinguished heroes of the Brunswick race, from antient effigies and paintings.

Historical Document.—A manuscript has, it is stated, been recently found in the Castle of Pèguet, Canton de Vaud, which contains a particular account of the wars between the Swiss and Savoyards, and the campaigns of Henry IV. of Savoy.

In progress for publication, in one volume 8vo. the Narrative of a Tour through Hawaii, or Owhyhee, with an account of the geology, natural scenery, productions, volcanoes, &c., history, superstitions, manners, and customs of the inhabitants of the Sandwich Islands; a grammatical view of their language, with specimens; the account given of the death of our celebrated circumnavigator, Captain Cook, by the natives; and biographical notices of the late King and Queen, who died in London; by W. Ellis, Missionary from the Society and Sandwich Islands.

M. Canel, bookseller of Paris, has announced his intention of publishing a Collection of Engravings, from full length portraits, of celebrated personages of the present time, painted by Gerard, first painter to the King of France, who will have the superintendance of the execution of the plates. The size is eight inches by five, and the work it is supposed will be comprised in about fourteen parts, each containing six portraits.

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Recent Patents.

To SAMUEL WELMAN WRIGHT, *late of Wellclose-square, in the County of Middlesex, but now of Princes-street, Lambeth, in the County of Surry, engineer, for his Invention of certain Improvements on the Machinery or Apparatus for Washing, Cleansing, or Bleaching of Linens, Cottons, and other Fabrics, Goods, or Fibrous Substances.*

[Sealed, 20th April, 1825.]

THESE improvements consist in the construction of a system of vessels, and their connecting pipes, by the employment of which the patentee states himself to be enabled to carry on a process of washing and bleaching, and to clean all impurities from linen, cottons, and other fibrous substances, without submitting those articles to rubbing. The mode by which this object is proposed to be effected, is by first packing the articles, whether of wearing apparel or other goods, which are to be washed,

in a close vessel, and then forcing through them (by means of steam pressure) an alkaline solution, as soap and water, or a solution of pearl ash, soda, &c. which in its progress will effectually remove all impurities or colouring matters, from the linens, cottons, or other goods so operated upon. After this it is necessary to pass hot water through the said articles, for the purpose of cleansing away all the alkaline matter; and ultimately to force steam of a high pressure through them, for the purpose of removing the water, and drying the cotton, linen, &c. when the process may be considered to be complete; and the articles being withdrawn from the vessel in which they had been packed, will be found to be perfectly clean, and nearly dry.

In bleaching, a similar process is to be adopted; but in addition to this, and the employment of the usual chemicals, a current of cold air is to be introduced, which greatly assists in giving whiteness to the fabric.

This process in washing and bleaching is to be carried on by a series of vessels, placed in convenient situations, their particular arrangement being subject to circumstances, and which vessels are to be connected together by pipes, with suitable cocks to pass the liquor, steam and air, from one vessel to another, or stop its progress. The patentee does not, therefore, intend to confine himself to any particular arrangement of the vessels, and has only exhibited in his drawing (see Plate XI. fig. 1), such a disposition of them as he considers to be eligible for the purposes of the said process, and which will assist in illustrating the principles that he proposes to act upon.

A, is a vessel made of copper, and formed as the frustrum of a cone, in the lower part of which is a perforated false bottom or grating, and below this the real bottom, from whence a pipe descends. In this vessel, the cotton,

linen, or other articles, about to be operated upon, are to be closely packed, having been previously soaked in water, and rubbed over with soap, they are then to be covered by the cap, which is screwed down and rendered steam tight at the joint. This vessel may be enclosed by a jacket, to prevent the radiation of heat, but this is not absolutely necessary. B, is a vessel containing the soap and water, or other alkaline solution, and C, is a pipe, leading from a steam boiler, placed at any convenient distance. The steam having been raised in the boiler to what is called high pressure, (about 50lbs. upon the inch), it must be gradually admitted into the apparatus, by partially opening the stop cock, *a*, when it will pass into the vessel, A, where the fabrics are deposited, and after having acted upon the goods for about half an hour, the cock may be completely opened, and the full force of the steam be allowed to exert itself in the vessel, and also to pass up the pipe, D, into the vessel, B, which contains the alkaline solution; the cocks, *b*, *c*, *d* and *e*, being now opened.

The pressure of the steam on the surface of the liquor in the vessel, B, will now cause it to descend through the pipe, E, into the vessel, A; and here the steam continuing to press, will force the liquor through the articles under operation, soaking every part and carrying dirt and other impurities to the bottom of the vessel, when the liquor will pass away by the pipe, F, into a receiving vessel, G, below.

The cocks, *b*, *c*, *d* and *e*, are now to be closed, and the cocks, *f* and *g*, opened, when the pressure of the steam passed through the pipe, H, exerting itself upon the surface of the alkaline liquor, in the vessel, G, will force the liquor up the pipe, I, I, and return it into the vessel, B, where it will be ready to repeat the operation in passing

through the vessel, A, as above described. The number of times that may be necessary to force this alkaline solution through the goods, must depend entirely upon circumstances, such as the state of their foulness, and can only be known by experience; for ordinary washing, however, of body linen, twenty times would perhaps be found sufficient.

Considering now that all the dirt and other impurities have been removed from the cloths or other articles operated upon, the next process is that of rincing, which is performed by closing the cocks, *b*, *c*, *d*, *e*, *f*, and *g*, and opening the cocks, *h*, *i*, and *k*, when the steam from the pipe, C, will pass up the pipe, K, into the vessel, L, which contains clean hot water. The pressure of the steam upon the surface of the water in the vessel, L, will now cause the water to descend through the pipe M, into the vessel, A, where the pressure still acting will force the water through the goods in the vessel, and cleanse away all the alkaline and other impure matter, which with the water will proceed by the pipe, N, into the vessel, O.

In order to return the water from hence into the vessel, L, for a repetition of the process, the cocks, *h*, *i*, and *k*, must be closed and the cocks, *l* and *m*, opened, when the steam passing from the pipe, C, through the pipe, P, into the vessel, O, will there exert its pressure upon the surface of the water, and force it up the pipe, Q, into the vessel, L, where it will be ready to be employed as before described. The number of times that may be requisite to pass the water through the vessel, A, must be variable, dependant upon circumstances, and can only be found by experience.

The last part of the process is the drying, which is effected by closing all the cocks except *a*, *d*, and *e*, when

steam at a reduced pressure is to be allowed to blow through the pipe, C, into the vessel, A, where passing through the articles, all the water will be driven off, and the steam escaping through the pipes, F and R, the goods will be left nearly in a dry state; but care must be taken that the steam be not allowed to act longer than is necessary to drive off the water, and not at a greater pressure than 20lbs. on the inch.

When the bleaching of piece goods is the object, such goods are to be folded carefully, and packed closely side by side in the vessel, A, and for this purpose, perhaps, a vessel, having rectangular sides, may be found more convenient than a circular one, but its width must diminish downwards; and in addittion to the process of washing and steaming, as above described, it is proposed to introduce currents of cold air through the pipe, S, by means of a blowing machine.

The patentee recommends, that immediately after every operation of passing the chemical solution or the water through the goods, has been performed, that steam be thrown in for the purpose of drying the goods, and then a blast of cold air, in order to cool them, which will greatly assist in whitening the fabric.

It is to be particularly observed that the internal parts of all the vessels must be made of copper.

The patentee says in conclusion, "I wish it to be understood that I do not claim or confine myself to the precise disposition or form of the several vessels employed, as exhibited; but I do claim the particular construction of the washing or bleaching vessel, A, diminishing in its diameter or breadth downwards, whether that vessel be made with straight or curved sides; I also claim the mode of washing and bleaching of cotton, linen, and other fibrous articles, packed in the said vessel in a com-

pact state in the manner above described, and also for drying the said articles while in the vessel; and lastly, in the introduction of blasts of cold air, which operations together produce a similar effect to the ordinary process of bleaching.

[*Inrolled October*, 1825.]

To WILLIAM CHURCH, *of Birmingham, in the County of Warwick, Esq. for his Invention of certain Improvements in Casting Cylinder Tubes, and other articles of Iron, Copper, and other Metals.*

[Sealed 18th January, 1825.]

THE particular object of this invention is to effect the casting of metallic forms of the kinds above alluded to, in a more perfect manner than has heretofore been accomplished, in order to produce the articles so cast free from air-holes; that is, perfectly sound, compact, and of a uniform texture; and in which process of casting, the patentee states that he is enabled also to give a case hardened surface to the articles if required.

For this purpose, it is proposed to employ both exhaustion and condensation of air in the process, and therefore he combines such apparatus as will enable him to effect those objects in a convenient way. But as the great variety of articles to be cast, must necessarily require differently formed apparatus, and as it is impossible to describe every form that circumstances may render eligible, he merely exhibits in the drawing which accompanies his specification, one construction of appa-

ratus, (by way of elucidation) which he proposes to employ for casting cylinders or rollers.

Plate XI. fig. 2, represents a section of the mould in which the article is to be cast, with the other parts of the apparatus suspended by means of chains to an ordinary crane, in which is also shewn a section of the pan or chest that holds the melted metal, with an air pump and air vessel connected, both to the mould and to the metal chest, by means of tubes with union joints.

The mould in this instance consists of a hollow cylinder of iron, *a, a, a, a,* with flanges at the ends, the interior being bored, or otherwise truly formed to the figure of the intended cylinder or roller about to be cast; *b, b,* is an outer case or jacket surrounding the mould, and leaving a space between for the passage of cold water, which is intended to be conducted through this passage at the time of casting, by means of a pipe leading from a cistern, or otherwise, and a cock at bottom, in order to cool the mould; *c, c,* and *d, d,* are caps to be attached to the ends of the mould, in which is formed the hollows or recesses for casting the gudgeons and ends of the roller; these caps and the jacket are all united to the cylindrical mould by means of screws passing through the flanges. In the upper part of the cap, *c*, a small channel is made with a conical valve, and a short piece of pipe, *e*, is attached at the mouth of the orifice with a stop cock,, through which channel and pipe the mould is to be exhausted. At the lower end of the cap, *d*, a pipe or tube, *f*, is attached by a gland, and rendered air tight, which pipe is made of such a material as will resist the action of the heat, or such as crucibles are usually composed of; through this pipe the melted metal is intended to flow into the mould. The lower end of this tube, *f*, is covered by a cap of iron, or other

metal, which should be made to fit the tube closely, and be luted at the upper edge.

The mould thus put together is to be suspended by chains from the crane, and then the pipe, *g*, which is attached by a cock joint to the air pump, *h*, is to be connected to the short pipe, *e*, by means of the union joint. The joints of the mould being now properly luted and rendered air tight, the air pump is put to work, and the interior of the mould exhausted, in which state it is ready for casting, or it may have been previously exhausted by the ordinary application of an air pump.

The pan or metal chest may be of any convenient form; that shewn in the figure at *i, i*, is preferred, and it must be of such capacity as will contain a sufficient quantity of melted metal to produce the article about to be cast. This pan is to be inserted in another pan or vessel, *k, k;* and the space between the two to be filled with pulverised charcoal or other materials that are imperfect conductors of heat. The pan with the melted metal is to be brought from the furnace, and placed in such a situation under the mould, that the mould may be lowered down to it, and the pipe, *f*, immersed in the melted metal, the conical form of the flange at the bottom of the cap, *d*, fitting into the rim, *e, e*, on the top of the metal chest; and in order to make the joint more close, a springing hoop, *m*, of wrought iron, and of a wedge form, is placed round within the rim in contact, and forming an air tight joint with the upper edge of the rim, which giving way at bottom to the pressure of the mould, secures the joint air tight. Through the lower flange of the cap, *d*, there is a small aperture, with a short piece of pipe, *n*, attached to it, through this aperture and pipe, the air may be drawn from or forced into

the metal chest, *i*. The mould and metal chest being now united, as shewn in the drawing, the pipe, *o*, which is attached to the air pump, and to an exhausted air vessel, *p*, by means of a three-way cock joint, *q*, is connected to the short pipe, *n*, by a union joint, and the whole of the apparatus is now ready for effecting the casting.

In commencing the operation, the cock, *q*, is to be turned so as to open a communication between the metal chest, *i*, and the exhausted air vessel, *p*, by which the pressure of the atmosphere is removed from the surface of the metal for the purpose of preventing it from rushing up the pipe, *f*, into the exhausted mould, when the mouth of the pipe opens by the melting of the metal cap, which cap is to be made of such metal and thickness as will allow it to melt shortly after the immersion of the pipe in the fluid metal. The cock, *q*, is now to be turned so as to cut off the communication with the exhausted vessel, *p*, and open a communication with the lower end of the air pump.

It is here to be observed, that the air pump is employed both as an exhausting and a condensing pump; and its piston being now put in action, air is driven from the lower end of the pump through the pipe, *o*, into the metal chest, which forces the metal up the pipe, *f*, and thereby causes it to fill the mould.

To guard against the pressure of any air which might have gained access to the interior of this mould, the stop cock, *e*, is to be opened, which leads through the pipe, *g*, to the exhausting end of the pump, and as the pump forces air on the surface of the melted metal, a constant vacuum is kept up in the interior of the mould above the rising metal.

In order to prevent the metal from flowing through

the exhausting passage, a conical float valve is suspended in the cap, *e*, which as the metal rises, closes the aperture. It may be necessary to remark, that the valves of the air pump are not shewn, as that apparatus is already well understood.

The patentee states, "It is obvious that moulds which are designed to cast articles, having irregular surfaces, such for instance as cannon that cannot be slidden out, must be constructed of parts put together, so as to render them air tight. Though I have shewn in the drawing a jacket surrounding the cylindrical part of my mould for the purpose of conducting cold water, yet I do not intend under all circumstances to employ that mode, but only when I desire to give the casting a case hardened surface."

[*Inrolled July*, 1825.]

To WILLIAM HIRST, HENRY HIRST, *and* WILLIAM HEYCOCK, *Woollen Cloth Manufacturers, and* SAMUEL WILKINSON, *Mechanic, all of Leeds, in the County of York, for their Invention of certain Apparatus for preventing Coaches, Carriages, Mails, and other Vehicles, from overturning.*

[Sealed 11th August, 1825.]

THIS invention for preventing coaches, mails, and other vehicles from overturning, consists in the adaptation of a hanging arm on each side of the coach, with a small wheel at bottom, which arm, in the event of the coach being raised on one side, is instantly thrown out on

the opposite side, forming a prop or support for the body of the coach to rest upon, and which is thereby prevented from falling over.

This apparatus is exhibited in Plate XII. at fig. 1, hanging by the side of a stage coach body; at fig. 2, an edge view of the same is shewn, and at fig. 3, the coach is represented as raised up on one side, and supported by the prop on the other side, which in this figure is seen resting upon the ground. The same letters refer to similar parts in all the figures; *a*, *a*, are the two arms of the hanging prop, which is suspended by knuckle joints at top; *b*, is a small wheel turning upon an axle, at the lower end of the hanging prop; *c*, *c*, are springs attached to the sides of the coach body, pressing against the back of the arms, *a*, *a*, for the purpose of forcing them outward, as seen at fig. 3; *d* is a small catch or hasp, which is fixed at the back of the prop, and by locking on to a lever bar, *e*, (see fig. 1), keeps the prop close to the coach in a perpendicular position, as at fig. 2. At the end of the lever bar, *e*, a rod, *f*, is attached by means of a joint, which rod passes up to the roof of the coach body, and has a catch in the box, *g*, that keeps it from falling until liberated. This catch is seen in the longitudinal section of the box, *g*, at fig. 4. In the middle of this box, standing across the roof of the coach, there is a recess, in which an iron or other heavy ball, *i*, rests, and when one side of the coach rises, as it would do in running over a bank or other elevation, the ball, *i*, immediately rolls to the lower end of the box, and striking against the catch at the top of the rod, *f*, pushes the catch from the edge of the plate, *h*, and allows the rod, *f*, to descend. By the descent of the rod, *f*, the lever bar, *e*, is allowed to fall, which liberating the catch, *d*, permits the springs, *c*, *c*, to

throw out the prop, *a*, as at fig. 3. The back rod, *k*, which is attached to the hinder part of the prop, *a*, is drawn out by the projection of the prop and slides, through a slot in the guide, *l*. Near the extremity of this rod, *k*, there is a catch, *m*, which stopping against the edge of the slot prevents the rod from returning, and thus keeps the prop extended, when the small wheel, *b*, coming in contact with the ground, supports the coach and prevents it from overturning.

The projecting of the prop may be effected by means of handles, at the top or inside of the coach, so as to be at the command of the guard, coachman, or passengers; but the patentees prefer a self-acting contrivance, as shewn in fig. 4, by which, whenever the coach rises on one side, so as to endanger its overturning, the apparatus will immediately be in action, and prevent the possibility of those fatal accidents, which so frequently take place by the overturning of stage and other coaches.

[*Inrolled February*, 1826.]

To JAMES BUTLER, *of the Commercial-road, in the Parish of Lambeth, in the County of Surry, for his New Invented Method of making Coffins, for the Effectual Prevention of Bodies being removed therefrom after Interment.*

[Sealed 12th August, 1825.]

THIS invention appears to be not a new method of making coffins, but a peculiar mode of fastening on the

lid after the body has been introduced into the coffin, which the specification states to be "a new method of so effectually securing a coffin, that when the lid is fixed down by an original screw, it cannot be withdrawn, or the body abstracted."

The interior of the coffin is to be lined or bound with plates or ribs of iron, and in the lower part of the coffin within, there are to be holes with screw threads tapped in them. The lid having been placed upon the coffin, long screws are introduced into counter sunk holes, and passing through the lid, and through holes in the side ribs, down to the bottom of the coffin, enter into the tapped holes above mentioned, by which means the lid is secured to the bottom.

But the particular feature of the invention is the fastening screws, the heads of which are made with a screw thread, tapped in place of the cut or slit usually made in the head of a screw. Instead, therefore, of applying an ordinary screw driver to wind the screws into the holes, a winch or lever is screwed into the thread in the head of the screw, and by that means the screw is driven down to its intended bearing, (that is, until the head is bedded in the counter sunk hole of the lid); and when the lid has been thus made fast, the winch or lever being turned the contrary way, comes out of the head, and leaves the screw fast in the coffin.

The head of the screw having been case hardened, a cut or cross groove cannot be afterwards made in it, so as to allow of the screw being turned the contrary way, neither can any instrument be introduced to withdraw it, as the edge of the iron plate into which the head is imbedded, effectually prevents it from being taken hold of.

[*Inrolled October,* 1825.]

To Charles Mercy, *of Edward Buildings, Stoke Newington, in the county of Middlesex, Gentleman, for his Invention of certain Improvements in Propelling Vessels.*

[Sealed, 8th September, 1825.]

This invention is a mechanical apparatus, to be applied to row, or impel vessels on water, which apparatus may be actuated by the power of a steam engine, by hand labour, or by any other suitable means.

Plate XII. fig. 7, exhibits the patentee's representation of his projected propelling machines, which, as far as we are enabled to understand it, consists of a shaft, *a*, to be carried across the vessel, either under or over the deck, or in any other convenient part, in the same manner as the shaft of ordinary paddle-wheels are placed. On the ends of this shaft, blocks, *b*, *b*, are fixed, into which spokes or arms, *c*, *c*, are inserted, for the purpose of carrying the flaps, *d*, *d*. These flaps swing upon pivots, and rise into horizontal positions, so as to pass through the water edgewise as the propeller recedes, but fall into nearly perpendicular positions against the arms and cross-pieces, as the propellers advance.

The lever, *e*, or as the patentee calls it, the pulling bar, is attached to the shaft, *a*, at one end, and to the beam of a steam-engine, or other alternating power at the other end, by which means the propelling apparatus is made to oscillate, and when the arms, *c*, *c*, are advancing, the flaps bear against the water, and impel the vessel in a contrary direction, but when the arms return, the flaps rise and pass through the water without resistance.

This apparatus may be worked at the bow, or at any other part of the vessel; it may be actuated by manual labour, for propelling a small light boat, or by steam power for a large vessel. If these propellers are placed on the sides of the vessel, the blocks may be fixed upon short axles, having bearings on each side, with levers, *e*, attached to the blocks, and to the beam, or vibrating part of the engine. The size of the machinery must depend upon the magnitude of the vessel it is intended to propel.

[*Inrolled November,* 1825.]

To Thomas Steele, *of Magdalen College, Cambridge, Esq. for his Invention of certain Improvements in the Construction of Diving Bells, or Apparatus for Diving under Water.*

[Sealed 28th October, 1826.]

These improvements consist in combining what the patentee calls a bell of observation with the ordinary working bell, and in connecting with this bell of observation an air chamber above the surface of the water, by which means a communication is formed, that enables the persons above and below, to converse together so as to give and receive orders for shifting the situation of the bell, to lower grappling-tackle, draw up goods, and so on.

Plate XII. fig. 5, is a section of the improved bell, the part marked *a*, is the ordinary bell, open at bottom, in

which the workmen act, subject to the pressure of the condensed air, as usual, when the bell is under water; *b*, is a close compartment or bell of observation, with glass windows, which has a communication with the atmosphere above, by two pipes, *c* and *d*.

Before the bell is lowered, the director of the work passes through the man hole, *g*, into the bell of observation, *b*, and having closed the man hole air-tight, the bell is allowed to descend, by means of the slinging chain, with the director in the compartment, *b*, and the workmen in the open bell, *a*. When the bell has reached the bottom, the workmen will be subject to the inconvenience of the pressure of the condensed air in the working bell, *a*, but in the close compartment, *b*, the director will be enabled to move about in a common atmosphere, communicated through the pipes, *c* and *d*, from above.

The director looking out through the windows placed in the sides, the top and the bottom of the bell of observation, seeing the situation of articles lying near the bell, writes upon a slate or other tablet, and holding it up at the window which looks into the working bell, instructs the workmen how to proceed; or if any communication is required to be made with the persons above, he speaks through one of the pipes. Should it be found necessary to give instructions at any length to the workmen, a paper may be passed through the tube, *f*, in the side of the compartment, *b*, by opening the inner cock, and then closing it, when the workmen opening the outer cock, takes the paper out of the tube, and closes the cock again. If it should be found necessary for the purpose of refreshing the air or ventilating the close chamber, *b*, the cock, *g*, may be opened, and a supply of air taken from the open bell, which is restored by the forcing pump above, through the pipe, *h*. A small aperture, *i*, is made

through the lower part of the compartment, *b*, to be furnished with an air-tight sleeve, for the observer to put his arm through if necessary.

In case one of the workmen should find it necessary to quit the bell, and proceed some distance under water, to gain access to some part of a wreck which is at a small distance from the bell, such, for instance, as to enter one of the port holes of a ship, he must be furnished with a water tight hood, enclosing his head, and for the purpose of respiration, this hood must have an air pipe, forming a communication with the interior of the working bell: such a contrivance is, however, not new. The improvement therefore proposed, is to adopt a second pipe to the hood, communicating with the chamber of observation, *b*, so as to allow the workmen to converse with the director, and thereby facilitate the business, the pipes being furnished with suitable stop cocks.

Fig. 6, shews an improvement proposed to be adapted to an ordinary working diving bell; *a*, is the ordinary bell, *b*, is the pipe through which condensed air is to be pumped, *c*, are the chains by which the bell is slung, and lowered into the water from a vessel above. To this bell is attached a pipe, *d*, communicating with an air-tight chamber, *e*, on the deck of the vessel, or any other convenient place above the water. In this chamber a person is placed, who will, of course, suffer under the same pressure of condensed air that those in the bell are subject to; but the advantage to those in the bell will be, that they are enabled to converse with the person above through the pipe, *d*, who, from his situation, can communicate instruction to such persons as are near him. The chamber, *e*, has another air tight chamber, *f*, con-

nected with it, into which the person in *e* may get through a man hole, and having closed the man hole, so as to render the chamber, *e*, still air tight, he may then open the chamber, *f*, and pass out.

The patentee proposes, as an addition to the last described apparatus, to form a flexible tube of water proof canvas, or other water proof material, sufficiently large for a man to pass through; this tube is to be distended by a series of hoops, and being inserted into an opening in the air chamber, *e*, and made fast and air tight thereto, the tube is to be passed down through the water, and made fast in like manner to an opening in the working bell, which has been previously planted at the bottom, and secured by grapples or anchors, for the purpose of forming a ready communication, by means of a rope ladder, between the deck of the ship and the diving bell below. This the inventor "hopes may become a very powerful instrument in carrying on submarine operations, as it affords a theory which he ventures to predict will in time be reduced to practice, as a mode of sending men down from the deck to the bottom of the sea, by the same means by which they ascend from the deck to the mast head."

In order to throw light into the port holes of vessels, or other inaccessible parts, for the purpose of examining between the decks of a wreck, the patentee proposes to construct an optical instrument connected with the diving bell, which shall enable him by means of reflecting mirrors to throw a strong light from a lamp in any oblique direction. This, however, is not claimed under the present patent, and is not, therefore, particularly described.

[*Inrolled, April,* 1826.]

To Robert Britell Bate, *of the Poultry, in the City of London, Optician, for his Invention of an Improvement on the Frames of Eye-Glasses.*

[Sealed 15th March, 1825.]

This invention is a folding pair of spectacles, which when opened, are used over the bridge of the nose as ordinary hand spectacles, or when closed as a reading glass. The peculiar features of the invention are the introduction of springs, concealed in the frame, by which means, on moving a small slider, the frame is instantly thrown open, and the reading glass converted into a pair of spectacles.

In Plate XI. fig. 3, exhibits the frame folded together in the form of a reading glass. Fig. 4, is the same thrown open into the form of a pair of hand spectacles. Fig. 5, is the frame of one of the eyes detached, with the projecting piece, *a*, shewn on the top, in which is the joint, *b*, and the horn, *c*. Fig. 6, represents the hollow part of the bridge, or nose piece, *d*, having a spring within, which is shewn edgewise, and detached at fig. 7.

On the stem or handle of the frame, *e*, there is a stud or other contrivance connected to a small bolt, concealed within the stem. This bolt is pressed outwards by a vertical spring acting behind it, and which, when the frame is folded together, as at fig. 3, shoots into a small hole in the edge of one of the eye frames, and keeps the frame compact, as there shewn. But when the bolt in the stem of the frame, *e*, is drawn back, the bow spring, fig. 7, which is concealed in the bridge, *d*, exerts its elastic force against the horns, *c*, *c*, of the two

eye frames, and immediately forces the frame open into the form shewn at fig. 4.

There may be various modes of forming and decorating the external parts of the frames, as by chasing, carving, &c. which will not alter the principles of the invention, as the improvement claimed under the patent consists in the spring bolt concealed within the stem, *e*, for the purpose of locking the frame together; and the bow spring, fig. 7, which acts upon the horns, *c*, *c*, for the purpose of throwing open the frames when the bolt is withdrawn.

[*Inrolled September*, 1825.]

To WILLIAM HURST *and* JOHN WOOD, *both of Leeds, in the county of York, Manufacturers, for their Invention of certain Improvements in Cleaning, Milling, or Fulling Cloth.*

[Sealed 5th March, 1825.]

THESE improvements consist in employing steam in the operation of fulling or milling woollen cloths, instead of soap and water, as heretofore. The machinery is the same as the ordinary stock used for fulling, into which the cloth is to be put and beaten, and turned over as usual; but in place of the soap and water commonly employed for wetting the cloth, a pipe, leading from a steam boiler, is introduced into the back or side of the stock, and the steam is made to blow through a number of small holes, so as to insinuate itself among the cloth, which by that means becomes thoroughly wetted, and all

dirt and greasy materials are effectually driven out of the cloth by the steam.

As in this process the presence of water is objectionable, a waste pipe is placed in the bottom of the stock, to carry off the condensed steam. By these means the steam enters into all the folds and meshes of the cloth, and completely supersedes the necessity of soap, which effects a very considerable saving in the process, and allows it to be conducted with greater ease than by the old method.

[*Inrolled, September,* 1825.]

To ABRAM HENRY CHAMBERS, *and* ENNIS CHAMBERS, *both of Stratford Place, in the Parish of St. Marylebone, and* CHARLES JEARRARD, *of Adam-street, Manchester-square, also in the Parish of St. Marylebone, in the County of Middlesex, Esqs. for their Invention of a New Filtering Apparatus.*

[Sealed 5th March, 1825.]

THE specification states, that this invention consists in " an apparatus for causing water when it is to be filtered to pass upwards through a filtering bed, or the materials which are to filter it, instead of downwards, as is usually the case; and for causing such passage upwards of the water to be effected by its own specific gravity, and its natural inclination to regain that level from which a part of the said apparatus for a time divests it."

These principles are attempted to be put into the appearance of a practical shape in the figures which accom-

pany the specification, and are shewn in Plate XII. in the way the patentees have designed them.

Fig. 8, represents a cistern of the kind usually employed to hold water for domestic purposes; it is divided by a partition in the middle into two distinct compartments, which have no immediate communication with each other. The compartment, *a*, receives the water in its impure state, from an ordinary service pipe with a ball cock; the compartment, *b*, receives the water after it has been purified by filtration. A small pipe, *c*, leads from the bottom of the cistern, *a*, into a box, *d*, and the water from *a* descends by this pipe into the box: *e*, is a larger pipe or tube, extending from the box, *d*, up to the second compartment of the cistern, *b*; and this tube being filled with a filtering material, the water rises through this tube into the cistern, *b*.

The materials to be placed in the tube, *e*, as a filter, may be cinders, sand, or any other like substance that is not soluble in water; but the material that is most approved, is a composition called pozzolana, for which the above A. H. Chambers, Esq. obtained a patent in 1821, (see our second Vol. page 270.) At the upper and lower ends of the tube, *e*, perforated plates are fixed, for the purpose of confining the filtering materials, and at the same time allowing the water to pass; the residium depositing itself in the box, *d*, may be drawn off or otherwise removed as occasion may require. The superincumbent pressure of the water in the cistern, *a*, upon the column, *c*, causes it to rise through the filtering tube, *e*, into the cistern, *b*, to the same level as in *a*, in a purified state fit for use.

Another mode of effecting the same object, is shewn at fig. 9, which is an ordinary water butt. In the lower part of the butt, a stand, *a*, is placed, and upon this the

filtering vessel, *b*, *b*. The vessel has a perforated plate or grating, at bottom, and above this a quantity of the filtering material, *c*, which is covered at top with a similar perforated plate. The pressure of the water in the butt above the filtering material, causes it to ascend in the vessel, *b*, and after having passed through the filter, to rise to the upper part of the vessel, as at *d*, in a purified state fit for use.

These principles are further proposed to be applied to the clarifying of the water of muddy rivers. Fig. 10, is intended to represent a section of part of a river; *a*, is a dam or weir, interrupting the course of the river; *b* the part where the water is allowed to descend; *c*, *c*, an arched tank; *d*, *d*, a grating on the top of the tank, in which the filtering material, *e*, *e*, is deposited. In this method of adapting the before described principles, the superincumbent pressure of the water at *b*, forces the water in the tank upwards through the grating, and through the filtering material, into the part of the river, *f*, below the weir, where the water flows in a purified state.

[*Inrolled September*, 1825.]

To JOHN WEISS, *of the Strand, in the County of Middlesex, Surgical Instrument Maker and Cutler, for his Invention of certain Improvements on Exhausting, Injecting, or Condensing Pumps, and on the Apparatus connected therewith, and which said Improvements are applicable to various useful purposes.*

[Sealed 18th December, 1824.]

THIS invention is an improved syringe for surgical

purposes, principally designed to extract poisonous matter from the stomach, and to inject such liquors as shall dilute or neutralise the effects of the poison, where it cannot be effectually extracted.

There are several modifications of the invention, all of which are shewn in Plate XIII. Fig. 1, is an external view of the improved syringe, with its appendages; *a*, is the barrel or cylindrical part of the syringe; *b*, is the handle, by which the piston (shewn by dots) is worked up and down in the cylinder; *c*, is a three way cock; *d*, is a rod connected to the lever, which turns the three way cock. This rod passes through small holes in the rims of the cylinder, and bending over at top, proceeds some way down within, as shewn by dots; it is also made thin, and slightly flexible at the bottom, in order to accommodate itself to the arc, in which the lever of the cock turns; *e*, and *f*, are the two orifices through which liquors may be drawn into the cylindrical part of the syringe, or expelled from it.

Supposing the position of the three way cock to be such as shall place the orifice, *e*, open to the interior of the syringe, on raising the piston, any liquor into which the mouth of the orifice may be immersed, will flow up into the cylinder and fill it. When the piston has arrived near the top, it will strike against the end of the rod, *d*, within the cylinder, and by raising the rod, cause the lever to turn the three way cock, shutting off the orifice, *e*, and opening the orifice, *f*, to the interior of the syringe. On passing the piston down the cylinder again, the liquor which was drawn in at the orifice, *e*, will be expelled through the orifice, *f*, and as the piston proceeds, the collar, *g*, near the handle, by striking against the bent end of the rod, *d*, will push the rod

down, and turn the lever of the three way cock into its former position.

Fig. 2, is the section of a syringe, slightly varied in its construction from the preceding. The up and down action of the piston in the barrel of the syringe is the same as usual; but in this construction the piston rod is hollow, and slides upon a square rod, *h*, and the three way cock, *c*, is made to turn horizontally. Supposing the orifice, *f*, to be now open to the interior of the syringe, and its mouth immersed in any liquor, on raising the piston, the liquor would flow into the cylindrical part. It being now necessary to eject the liquor through *e*, the handle, *b*, is turned one quarter round, and in so doing, the rod, *h*, turns also, which being affixed to the three way cock, carries the cock round in a horizontal direction, closing the orifice, *f*, and opening *e*, through which the liquor will be ejected upon the descent of the piston.

Fig. 3, is another variation in the construction. The syringe is here also shewn in section, and with its hollow piston rod sliding upon a square rod, as in the last; *f* and *e*, are the two orifices for receiving and expelling the liquor; but instead of a three way cock, as in the former, a circular plate, *i*, with two holes at a quarter of a circle apart, corresponding to the orifices, is affixed to the square rod, *h*.

One of the holes of the plate, *i*, being immediately over the orifice, *f*, the rising of the piston will draw the liquor through that orifice into the barrel of the syringe, and on turning the piston and the square rod, *h*, as before, the plate, *i*, will slide round, closing the orifice, *f*, and bringing the other of its holes over the orifice, *e*, which will now be open for the ejecting of the liquor.

A fourth construction is proposed, by the plan of which the one orifice is open during the rising of the piston, and the other during its descent. Fig. 4, shews this last description of syringe, in section *f* and *e*, are the orifices; *c*, is a three way cock, turning horizontally, which cock is affixed to the stem, *h*, that passes up the hollow piston rod. The peculiarity of this syringe is, that the stem, *h*, is a flat bar, which the piston slides upon, and that its upper and lower ends are twisted a quarter round, by which means, when the piston comes near the bottom of the barrel, the twisted part of the stem acting in the slit of the piston, causes the stem and the three way cock, *c*, to be turned so as to open one orifice; and when the piston reaches near the top of the barrel, the other twisted end of the stem turns the three way cock in the reverse direction, so as to open the other orifice. By this contrivance, merely the ascent and descent of the piston opens and closes the orifices, and consequently the liquor which is drawn in at one orifice, is expelled at the other.

A small conical pin, fig. 5, is proposed to be used to force open the mouth of a patient when it is closed, in order to introduce the tubes which are to be attached to the syringe into the throat of the patient, for the purpose of pumping out the contents of the stomach; and in cases where the mouth cannot be opened by this means, a small flexible rod, fig. 6, is to be passed through the nostrils into the throat, for the purpose of producing an excitement to vomit, and thereby to get the mouth open.

[*Inrolled June,* 1825.]

To SIMEON BROADMEADOW, *of Abergavenny, in the County of Monmouth, Civil Engineer, for his Apparatus for exhausting, condensing, or propelling Air, Smoke, Gas, or other aëri-formed products.*

[Sealed 2nd April, 1825.]

THIS apparatus is intended to be employed either as a pump for exhausting, or bellows for injecting air, and is to be applied as a blowing machine for working furnaces, and driving currents of air, for cooling worts, &c., or to withdraw smoke, gas, or other aëri-formed products, generated either in the process of combustion, distillation, or other chemical operations.

Plate XIII., fig. 7, represents a sectional elevation of the first construction of apparatus proposed as an air pump, either for exhausting or propelling air. It consists of two inverted vessels, *a*, *b*, which are to be alternately immersed in tanks of water, *c*, *d*. The vessels, *a*, *b*, are suspended by rods to a vibrating lever, *e*, *e*, moving upon a fulcrum, as a scale beam; the alternating motion being produced by the power of a steam-engine, or any other suitable first mover.

There is a bent tube, *f*, *f*, passing through the bottom of each tank, and communicating with the pipe, *g*, for the purpose of drawing the air or other vapour through that pipe into the inverted vessels, which has valves inserted in it, opening inwards; *h*, *i*, are tubes, with valves, opening outward, for the purpose of conducting the air or other vapour from the inverted vessels. Supposing the vessel, *a*, to be nearly immersed in the water of the tank, *c*, on that end of the beam, *e*, rising, a partial

vacuum would be produced in the inverted vessel, to supply which the air or other vapour would pass from the pipe, *g*, through the tube, *f*, into the vessel, *a*; and upon the vessel, *a*, descending again, the air or other vapour with which it had become filled would be forced out of the vessel through the tube, *h*, into the trunk, *k*, *k*, and from thence it might pass forward in a strong current, as a blast for supplying a furnace, if employed as a blowing machine, or into the open air, if applied as an exhauster. In a similar way the ascent of the vessel, *b*, vibrating with the beam, *e*, causes the air or other vapour to be drawn into it; and the descent of this vessel expels the air, as before described, through the tube, *i*, into the trunk, *k*, and thus a continued blast is produced.

A variation in the construction of a blowing or exhausting machine, upon the same principles is shewn at fig. 8, which represents a section of a single vessel inverted in a tank of water. This construction is intended to be employed where power as a first mover is not available, and where the process of exhausting or blowing may be carried on slowly. The vessel, *a*, is immersed in the tank, *b*, and suspended by a chain, *c*, passing over pullies, with a weight attached at the other end of the chain. This weight is intended to be rather more than sufficient to balance the tank, *a*, and consequently will cause it to rise slowly, and by that means draw air or other vapour through the pipe, *d*, into the inverted vessel; when the vessel has reached the top, a part of the weight is to be removed, and the vessel allowed to descend by its own gravity, thereby expelling the air through the pipe, *e*, which has a valve opening outwards.

Fig. 9, represents another variation in the adaptation of the same principle to a blowing or exhausting machine. Here an inverted vessel, *a*, is made to rise and

fall in an air tight tank, *b*, which is about half filled with water. On the ascent of the vessel, *a*, the air or other vapour is drawn, as before described, through the pipe, *c*, and by the descent of the vessel, *a*, the air is expelled through the pipe, *d*, into the trunk, *e*. But in this machine a double operation takes place, for the tank, *b*, being air tight, when the vessel, *a*, descends, a partial vacuum takes place in the upper part of the tank, which is supplied with air through the tube, *f*, this tube having a valve that opens inwards only. When the inverted vessel rises, the air in the tank becomes expelled through the tube, *g*, into the trunk, *e*, and thus a constant blast is kept up.

[*Inrolled, October*, 1825.]

The principle upon which this apparatus is constructed is not new; the same has been applied to a blowing machine for a considerable length of time, indeed water bellows are very common. In our first Vol. page 301, Mr. Perkins's mode of ventilating the holds of ships is described, which is the same in principle, though not in construction; and Doctor Arnott's blowing apparatus, see our fifth Vol. page 227, has some considerable resemblance also; but Mr. Halls' blowing apparatus, connected with his mode of singeing lace, see our eighth Vol. page 186, and Plate IX. is precisely the same contrivance as is described in fig. 7 of the above patent, excepting that in the former there is a mode of equalizing the blast, which is not provided for in the present.

EDITOR.

To JAMES TETLOW, *of Manchester, in the County Palatine of Lancaster, Weaver, for his Invention of certain Improvements in Power Looms, for Weaving various articles.*

[Sealed 14th October, 1824.]

THE principal feature of improvement proposed under this patent, appears to be the weaving of two pieces of fabric one above the other in the same loom, and by the same operation. This is a similar object to that proposed in the specification of a patent, granted to Mr. Goodman, for a loom capable of weaving two rows of narrow goods, as ribbons or tapes, at the same time, (see our sixth volume, page 174,) and again in the specification of a patent, granted to Mr. Roberts of Manchester, for improvements on looms, for weaving plain and figured goods, (see our seventh Volume, pages 113 and 183.) The description of the present improvements does not, however, appear to us so clear as might be wished, we therefore give it in the words of the patentee, in order to prevent any misconception; referring to Plate XIII. for the figures.

"Fig. 10. is a front view of the loom, weaving two pieces in one loom, one piece above the other: *b*, the plyers seizing the cloth; *c*, levers connected to the plyers to remove the plyers upon the cloth when required; *d, d*, rollers over which a strap runs to connect it to a projection on the rod, *e e*, to assist the plyer, *b*, in stretching

the cloth; *g*, a trigger to receive a projection from the rod, *e*, by which the weight is lifted.

" Fig. 11. is a right hand view, *h*, of a lever connected with the trigger, *g*,—*k*, weights, suspended from the lever to retain the yarn on the beam, by the assistance of a cog-wheel, *n*, by which means the weights drop upon the lever, *h*, and by which process the plyers, *b*, are removed upon the cloth.

" Fig. 12, is a left hand side view, *o*, is a cog-wheel, by which means the levers, *p*, *p*, are alternately lifted; *q*, is a roller over which a strap runs, connected with the lever, *p*, to assist in working the cloth in the upper part of the frame.

" Fig. 13, are the plyers with the machinery connected as described in fig. 10, with the addition of two levers to assist in removing the plyers. Fig. 14, is the form of the reed, as described in fig. 10, and 13. Fig. 15, is the cog-wheel lever and weights, as described in fig. 11.

" Fig. 14, *r*, is a pair of plyers in a different form, in the act of stretching the cloth; *s*, *s*, are two levers attached to the teeth, working upon the plyers, *r*, by which means the plyers are enabled to open and shut, and stretch the cloth every pick; *t t*, a rod with a lever connected with the lath, to assist in recovering the plyers upon the cloth."

[*Inrolled, April*, 1825.]

The laws of patents require, that any competent mechanic should be enabled to make the machine from the specification; could the improved machine be made from the above description?

To JOSEPH FREDERICK LEDSAM, *Merchant, and* BENJAMIN COOK, *Brassfounder, both of Birmingham, in the County of Warwick, for their Invention of Improvements in the Production and Purification of Coal Gas.*

[Sealed 30th May, 1825.]

THESE improvements consist principally in the employment of common salt as a material for purifying gas, instead of lime and other earthy substances heretofore used for that purpose.

The patentees have described their process as capable of being performed in five different ways:—1st, By placing stratas of common salt, or the refuse taken from the bottoms of salt-pans, with the coal in the retorts,—that is, a layer of coal and a layer of salt, and then a layer of coal again, and so on, by which means the gas generated or distilled in the retort will become purified as it passes off. The comparative quantities of each so mixed will depend upon the quality of the coal operated upon. 2dly, The coal gas having been produced in the ordinary way, may be passed through several stratas or layers of salt, in a dry state, which will purify it. 3dly, The gas may be forced through a strong solution of salt and water. 4thly, It may be forced through a solution of silver, copper, zinc, iron, or other metal, in nitrous or other acid; and, 5thly, two or more of the above processes may be combined to effect the operation of purifying coal gas.

[*Inrolled, November*, 1825.]

Original Communications.

On Money and its Representatives in Trade and Commerce.

To the Editor of the London Journal of Arts.

SIR,

IN the early periods of time, when men were chiefly employed in cultivating the earth for subsistence, money was of little value, at least what was used as a medium of exchange. Trade and commerce were objects almost unknown, and what was transacted by way of exchange, was the produce of one country for that of another. In those countries whose population was employed in agriculture and the feeding of cattle, the produce was used in making purchases, or in fixing the value of property. If money was used, it was in the mass of metal, or by weight. Thus Homer describes the golden armour of Glaucus as of the value of one thousand oxen, and the iron armour of Diomedes as only worth ten oxen. But man found it necessary to use something capable of passing from hand to hand, and of some fixed value, to facilitate exchanges, and to represent property. In the time of Servius Tullius, 460 years B. C. the Roman money were rude plates of brass, weighing about 2lbs. called *dupondium*, and value about 12d.; there were smaller pieces called the *as*, and weighing 12 oz. These two de-

scriptions of money were what was in general circulation in the state; but necessity, caused by the increase of population and the advancement in science, taught man to improve and create, to answer his wants. Thus, in the first Carthaginian war, it was found necessary by the state to increase the value of money, as well as to make it more portable, by reducing it to 2 oz. or one-sixth of its former weight: and again, in their wars with Hannibal, Fabius, the dictator, again increased its value one half; but this being insufficient for his wants, he further increased its value by reducing the *as* to half an ounce; by this means he was enabled to provide for his wants and pay the soldiers, as well as giving them money more easily transportable and equally valuable as the former heavy money of 12 oz. The next discovery was the coinage of the silver *denarius*. When Ogulninus Gallus and C. Fulvius Pictor were consuls, the silver *denarius* was equal in value to about 10lbs. of brass; this gave great facility to the transactions of trade; for as the Roman states became more populous and the people more civilized, their wants increased and the mind was exerted to provide means to meet its wants. Sixty or seventy years afterwards, gold became a part of the circulating medium, and a taste for the arts and the development of the mind began its progress in Rome. Lycurgus introduced iron bars at Sparta, as the money of the state. In this country, iron rings and iron plates were used as money; and this was no doubt considered by our naked ancestors as a great discovery and the first step towards civilization. Every state, either for its first wants, or when pressed by circumstances, has used some material which it has given value to. Thus, at the siege of Milan, Frederic II. stamped leather money. When King John of France, in

1360, gave Edward III. for his ransom 3,000,000 of gold crowns, it drove him to the necessity of coining leather money, with a small silver nail in the centre, to pay his household expenses; and in 1574, the Dutch coined pasteboard. Ethelbert, king of Kent, was the first British king whose coins are extant; and in his time, accounts began to be kept in pounds, shillings, and pence; and it was only about the year 1320 when the European states began to coin gold. In these early times, towns and cities, but thinly populated, could have but little demand for money.

And what is money, in an abstract point of view? It was said by Anacharsis, the Scythian, who had never seen money in his own country, that gold and silver seemed to him of no use to the Greeks, but to assist them in enumeration and arithmetic; and of what other value is it but as counters, to reckon the different commodities that are mutually exchanged in the concerns of life? Our merchants merely set off the value of one commodity against the value of another, by rating their value in their books by pounds, shillings, and pence; but real money is not used. And what is money, whether of paper, leather, copper, silver or gold, but the representation of so much labour, or the means employed to count up the value of the produce of labour. If but little labour is exercised, or if but few commodities are produced, then a smaller quantity of counters would only be required to represent them. Money, or what is so called, should increase in proportion to population, either in quantity or quality, or according to the quantity of commodities produced by population, in order that so many more counters in number or value can be had in exchange for them, else the commodity produced must

fall in value, for this very reason, that mankind does not possess in quantity sufficient to exchange for the work made. Now if only one million of counters existed in one year, and there was only produced by labour the value of them, all would be right, and the price of the commodity would remain the same; but if in ten years population should become doubled, the produce of labour and industry would be likewise doubled. What then could be done, if only one million of counters remained? Why it is evident they would not be sufficient; and that the man who was in possession of them would get twice as much for them as he could ten years before; as the price of work produced must fall one half and the articles made must be sold. Thus the increase of population and production is a curse instead of a blessing, unless we cut these counters into two parts, then the tide of prosperity will continue, and all will be benefited. Let us look at this country fifty years ago, and see what was its population; and let us suppose it at ten millions, merely for argument sake. Suppose the circulating medium, or what is called money, was ten millions; and this was found sufficient for all the transactions of trade and exchange. Suppose from machinery—the power of the steam-engine, and all the combined inventions of man—these ten millions of men were able to do the labour or produce commodities equal to what one hundred millions of men would do, would ten millions of counters be sufficient to represent all this production? I think every one would agree it would not, unless these ten millions of counters could be raised in value. And suppose no more counters could be got, the man who could invent something, that public consent agreed was equal to perform all the transactions of life, would deserve well of his country, whe-

ther it was of leather or paper. The human mind goes on gradually improving, and producing by labour in machinery, quantity; its productions should be represented by something bearing the value of it. And if thousands of millions of transactions are effected, there must be something to record them and represent them: it cannot be gold, or silver, or brass, because all the gold in the world is not equal to one year's contract in England alone; and if this was insisted on by a despotic monarch, he must sweep away from the earth the glory of his kingdom—its machinery, and almost all his subjects. What could this country do, if forced back to the money of the Romans, or the Greeks, or William the Conqueror? England has arisen to its present state of opulence, and power, and glory in the earth, by the inventive powers and genius of its people, and by conceiving of means to represent its wealth, and with those means to effect all the mighty contracts and productions of its ingenuity and power. Millions of money are created by a stroke of the pen. Paper is the very essence of the heavy metals, (the greatest discovery ever made by man,) which of themselves are too cumbersome and clumsy to perform those vast operations required in a country, whose very power and wealth, and population, are artificial. Sweep away its paper currency, and you sweep away the spirit, the soul of the state. What remains, I will allow, is gold; but it will lay an inert mass, a dead body without life; and with it must perish nine-tenths of society; with it will expire all that is great, ingenious, and glorious. I know it has been suggested by some, that we should imitate other states, who, when pressed for a more extensive circulation to supply their wants, have raised the value of money; that this country

could not suffer if the sovereign was raised in value to thirty shillings: this would effect much; but even this would not keep pace with the march of population and production. Leave the gold dead. Let the spirit, its shadow, perform all the operations of trade and commerce; this man can himself create, in the same ratio as he produces, or the country increases in population, and requires the means to count up the effects of the ingenuity, industry, and power of its inhabitants. The aspirations of the mind then are free to invent and produce; but if deprived of this power, and left to expect from the earth the production of gold for his wants, or to reward him for his toils, the mind will become enfeebled, and genius, and industry, and art will wither away; or if they remain, they will be parched up and dead, standing amidst a desert, over which the burning wind of death has passed, leaving behind it these dreadful memorials of its power, and of the glory which it has blasted, burned up, and destroyed.

I would just remark, that in every nation of the world, coins or money have progressively advanced in value, and never suffered any reduction permanently. If we take, for example, that portion in the English history, from the Conquest to the end of the reign of Elizabeth—and here let me remark, that the coinage of William the Conquerer was very simple—the pound in weight and tale was the same. The tale it was divided into twenty shillings, each shilling into twelve pence; the pound into twelve ounces, and each ounce into twenty pennyweights; thus the weight of each penny was one pennyweight, or twenty-four grains; and this also was the plan of Charlemagne, in the 8th century.

The Tower pound was coined in the year—

	s.	d.	
1066	20	0	
1300	20	3	
1344	22	2	
1346	22	6	
1353	25	0	
1412	30	0	
1464	37	6	
1527	42	2½	pound troy, 45s.
1560	56	3	——— 60s.
1601	58	1½	——— 62s.

You will observe that metals, as representatives of property, have kept pace with the increase of wealth and commerce. Iron, brass, and copper, first answered the purposes of money; silver next followed, and as property increased, gold succeeded; but the great increase of trade, and riches, and contracts, have rendered gold, at the old standard of value, insufficient as the circulating medium, as the representative of property, and therefore paper has been substituted, as capable of having attached to it any value.

I am, Sir,

Your's, &c.

B. COOK.

Birmingham, April, 1826.

We are favoured with the following communication on Perkins' steam-engine by a correspondent, of whose judgment and discrimination on such subjects we entertain the highest opinion, and therefore feel it a duty incumbent on us to lay it before our readers, which we do with considerable confidence. We are not, however, personally acquainted with the facts stated, though we have them reported to us from a source that is unquestionable.

To the Editor of the London Journal of Arts, &c.

Sir,

Mr. Perkins' system of generating high steam has recently been applied to the Cornish single stroke pumping engine, by Mr. Samuel Moyle, civil engineer, from Cornwall. Although the engine is not yet complete in all its parts, yet enough has been done to prove its great power and safety. As to the economy of the fuel, although undoubtedly great, nothing decisive is yet known, owing to the imperfection of the injecting pump, which occasionally failed in giving the full supply of water, upon which the proper supply of steam wholly depends. Enough, however, has been done to establish the important fact, that the higher the steam is used, the greater is the gain. Steam used at 42 pounds per inch, or at 3 atmospheres pressure, without condensation in the cylinder, is undoubtedly not likely to do more, if so much, as the condensing engine using steam at 3 or 4 pounds per inch pressure. The eduction side of the piston has not only to overcome the pressure of the atmosphere, but

the friction of the steam rushing from the cylinder through the eduction pipe, which will amount to at least half an atmosphere more, making 21 pounds resistance: add the friction of the piston, piston-rod, and valves, then there will be very little more pressure, if any, on the inch than when low condensed steam is used. It would appear that about two-thirds of the 42 pounds pressure on the inch is lost by the resistance on the eduction side of the piston. But as you increase the pressure of the steam, the gain is almost wholly on the induction side of the piston, since the resistance to the escape of the steam is very little more, whether you work at 500 pounds per inch, or 42 pounds per inch.

The following statements will shew the power and safety, although not the amount of the saving of the fuel. This engine, with a 9 and ½ inch piston diameter, and 6 and ½ feet stroke, lifted a column of water 40 inches diameter, and 40 feet high, making 14-6½ feet stroke per minute; consuming not more than 120 pounds of coals per hour. But as the engine never worked more than two hours at any one time, it is impossible to say what the actual saving of the fuel would be. After the engine is completed, and worked day after day without interruption, then the economy in the fuel will be clearly ascertained. The area of the pump being 20 times larger than the area of the steam-engine cylinder, and the water being lifted 40 feet high, it balanced the weight or power of 25 atmospheres; but as the friction, &c. must be added to the power required to lift the water, it was found necessary to raise the steam to about 32 atmospheres, to give a lively stroke to the pump.

The safety of this engine has been proved by the frequent openings or fractures which have taken place, (without injuring any one) in the experiments made in

generating high steam. The maximum of high steam has not yet been ascertained, but undoubtedly the higher it can practicably be used, the greater is the economy. The greater portion of the gain in high steam, appears to be owing to its expansive property. The higher the steam is raised, the sooner the stroke can be cut off; of course more is gained by expansion. The highest Mr. P. has ever used his steam for his steam engines, is 800 pounds to the inch, or about 57 atmospheres.

That the gain goes on in a geometrical ratio, his experiments on the steam gun have fully demonstrated. In some of those experiments, a pressure of 1600 pounds to the square inch has been used with perfect safety, and was found to project musket balls of the same weight and distance, one quarter farther into the target than the strongest gunpowder. Mr. P. has made another very curious discovery in experimenting on high steam, namely, that temperature does not always show the true power of the steam, although the steam is in contact with the water from which it is generated, but we cannot be so particular on this point as we could wish, on account of Mr. P.'s not having completed his patent for the remedy.

We feel great pleasure in adding to the above the testimonials of two gentlemen, whose names are well known in connection with steam-engines.

"We, the subscribers, have for some time past been employed as practical engineers at Perkins and Co.'s Steam Engine Manufactory, in applying Mr. Perkins' system of generating high steam to the Cornish single stroke pumping engine, of which we have had nearly twenty years practice. From what we have witnessed, we are perfectly satisfied that no danger can be apprehended from explosions. Its great power is established

by the fact of its having lifted a column of water 40 feet high, and 40 inches diameter, with a 9½ inch piston. As to the economy of fuel, which is evidently great, we cannot exactly say, owing to some parts of the engine being incomplete, especially the injection pump. The longest the engine has worked at any one time was two hours; at that time it was making 14 strokes per minute, 6½ feet stroke, and lifting a column of water 36 feet high, and 40 inches diameter, consuming not more than 100 pounds of coals per hour. We also certify, that Mr. Perkins' flexible steel piston is quite light, although, at times, working at a pressure of 50 atmospheres.

HENRY HORNBLOWER,
JOSIAH HORNBLOWER."

Novel Inventions.

Minimum of Adhesion in Steel, &c.

IT is a fact perhaps not generally known, to those who have written on the subject, that at the heat called black heat, but which is in fact nearly or quite a red heat in the dark, steel is broken or separated by fracture with much less force than when heated *more or less*, the requisite temperature varying probably in proportion to the carbon contained in the steel. The disposition to be easily separated by fracture, at a particular heat, exists in carbon or cast iron, in the alloys of copper and of tin, is very perceptible in flint glass, and perhaps in all factitious metallic compounds, some requiring a moderate and others a more intense heat.—*Silliman's Journal*, x. 128.

Expanding Wedge for Sawyers.

THIS instrument, the invention of Mr. Griffiths, of the Royal Institution, consists of a handle or centre-piece, and two lateral or spring-pieces, all made of clear sound ash; these are inserted at one end into a wedge-shaped brass or iron cap, so that the side pieces, by their divergence, form a continuation of its sides. On the handle is fixed an upright nearly in the centre of gravity, which being surmounted by a cross bar, supports the instrument between the planks. The instrument is intended chiefly to save the time and trouble of shifting the common wedges while sawing up balks of fir into deals; and being introduced into the first cut of two or three feet, will continue expanding and opening for a length of twelve feet. It is sometimes made of iron and steel.—*Trans. Soc. Arts.*

Method of Clearing Trees from Worms, Caterpillars, &c.

THE following method of driving worms, caterpillars, and all other sorts of insects, from trees, has lately been practised in America with singular success:—Bore a hole into the trunk of the tree, as far as the heart; fill this hole with sulphur, and place in it a well-fitted plug; a tree of from four to eight inches diameter requires a hole large enough to admit the little finger, and in the same proportion for larger or smaller trees. This will usually drive the insects away in the course of forty-eight hours, but uniformly succeeds, perhaps sometimes after a longer period.—*Silliman's Journal.*

A Cork Cutter.

A very simple machine has lately been invented in France, which is attended by a child only, and cuts four to five hundred bottle corks per hour. Another machine cuts and prepares the sheets of cork into ribs, which are made round by the finishing machine.

Malabar Piney Tallow.

This substance is obtained by boiling the fruit of the *vateria indica* (piney.) The tallow forms a solid cake on cooling, and is generally white, sometimes yellow, greasy to the touch but somewhat waxy, almost tasteless, rather agreeable in smell, as to which it resembles common cerate. It is solid and tenacious; so that a mass of nine pounds cast into a round form, could not be sundered by two men with a fine iron wire, and even with a saw its division was a matter of much difficulty: it, however, easily melts at 97½ Fahrenheit, at which temperature its specific gravity is 8965, and at 60, it is 9260. According to Mr. Babington's analysis, its constituents are—

Carbon	-	77,0	10 atoms
Hydrogen	-	12,3	9
Oxygen	-	10,7	1
		100	20

Mr. B. states, that at the town of Mangalore, five hundred weight of piney tallow may be obtained for fifty rupees, being at the rate of 2½d. per pound.

A Canal Digging Machine.

A canal digging machine has recently been introduced at Paris, to be worked either by horse, manual, or other moving power. It is capable of digging ten feet deep; a power equal to eight horses is required to work it. The machine will extract and carry out of the canal ninety-six cubic feet per minute. It advances gradually in working, and digs eight feet breadth at one stroke.

Steam Vessels.

There is said to be a contrivance now employed on board a Scottish steam vessel, which might be used to great advantage to other vessels of a similar kind. By the simple motion of a small handle or index placed on a table upon deck, in view of the man at the helm, and of the master of the vessel, every movement which the engine is capable of giving to the paddle wheel may be at once commanded. The vessel may be moved backwards or forwards, or may be entirely stopped at any given movement by merely turning the handle to the place denoted by the gradations of a dial plate. No skill is required for this purpose, the master himself or a sailor under his direction, can perform the office as well as the ablest engineer. Thus the confusion which frequently arises at night in calling to the engineer is avoided, and any ambiguity arising from the word of command being transmitted through several persons avoided, (circumstances which may lead to the most serious accidents.) The engine is by this contrivance as much under command as the rudder.

Weaving.

A silk loom has lately been invented at Lyons, the mechanism of which is said to be very simple, yet allows one man to weave five pieces of silk at a time. The Academy of Sciences have testified their opinion of its merits, (especially as regards labour) and rewarded the inventor, M. le Brun, with their honorary gold medal.

African Shawl.

A shawl, manufactured by Africans, from the growth of their own country, has been received at Baltimore. It consists of five pieces, woven three yards in length, and six inches in width, sown together, and is considered a favourable specimen of arts yet in infancy amongst that rude people. Cotton, of the quality of which this shawl is manufactured, is said to grow in abundance over a tract of country inhabited by many millions of naked human beings.

Thrashing Machine.

Mr. Rider, a mechanic, and small farmer, who resides upon the Wallop estate, in the parish of Westbury, has invented a portable thrashing machine, which with the power of one man will make three hundred effectual strokes in one minute. It can be removed with as much facility as a winnowing machine, and its cost does not exceed eight or ten pounds.

A Fire and Water-proof Cement.

Pour into a vessel half a pint of milk, and half a pint of vinegar, when the milk is perfectly coagulated, it must be cleared from all lumps which may have formed, let it then stand to settle, and when quite still, put the white of four eggs into it, it must then be well mixed. Then take a sieve with some quick lime reduced to a fine powder, which sift into the vessel containing the liquid, and stir the whole till it becomes a paste. By this means a person may obtain a mastic, which may be used for marble, alabaster, porcelain, &c.

This mastic is very strong, and is fire and water proof.—*Journal Hebdomadaire.*

Cannon Founding

Some experiments are at present being made at Douay, in cannon founding, by Messrs. Gay, Lussac, and D'Arcet, which tend to shew that the addition of a small proportion of iron into the alloy, doubles the force of resistance.

Improved Plough.

A farmer of Slippeback, in Moravia, has recently invented a new plough, by which he makes three furrows at a time, by the power of one horse. The Society of Sciences at Vienna, have in consequence awarded him a gold medal.

New kind of Stereotype.

The Gazette of Munich announces the invention of a kind of stereotype, by M. Sennefelder, to whom the art of lithography is due. A sheet of ordinary printing paper is covered with a layer of stony earth, *(terre pierreuse,)* to the thickness of half an inch, and sufficiently moistened with water. In half an hour it becomes of the consistency of paste, when it is put in frames, and on types composed in the usual manner, but not blackened, and the paste becomes impressed with the characters. The sheet is then dried on a stone flag, and melted metal is poured on it; the metal becomes a thin plate, and has all the characters standing on it as exactly formed as the original types: the proofs from these stereotype characters do not differ from those taken from moveable types. The author of this discovery offers to explain it fully for a subscription of 100 florins as soon as he shall have 30 subscribers.

It does not appear that this invention differs materially from the ordinary mode of casting stereotype plates.

Polytechnic and Scientific Intelligence.

LONDON ASTRONOMICAL SOCIETY.

March 10.—A paper was read, "On an appearance hitherto unnoticed in the nebula of Orion," communicated by the Astronomer Royal. This appearance was detected by means of Mr. Ramage's 25-feet reflector, which is now placed up at the Royal Observatory. It is well known that among a variety of stars, which ap-

pear at the same time in the field of view of the telescope with this nebula, there are four very bright ones, which form a trapezium, and at a little distance, three others nearly in a straight line. These three stars, Mr. Pond observes, are neither situated on the edge of the nebula, nor are they parallel to the edge; but they seem to be insulated from the nebula, the light of which retires from them in a semicircular form, as if they had either absorbed or repelled the light from their immediate vicinity.

The same appearance, the Astronomer Royal remarks, is observable in the trapezium, round the four stars of which the light has also receded analogously, leaving them on a comparatively dark ground. He conjectures that the *stars* have been the immediate cause of the disappearance of the light; and therefore he wishes to draw the attention of astronomers to the phenomenon, as it seems to deserve a marked attention.

The Astronomer Royal has noticed a similar appearance, still more decidedly, in another part of the same nebula at some minutes distance from the trapezium.

2. There was read, a communication from Colonel Mark Beaufoy, a member of the Council of this Society. It contains,

1. Observed transits of the moon, and of moon-culminating stars, over the middle wire of his transit instrument at Bushey Heath in sidereal time. These were observed in the course of 1825, and amount to 322.

2dly. Occultations of stars by the moon, in number 6.

3dly. Observations of two lunar eclipses in 1825.

4thly. Observations of eclipses of Jupiter's satellites, in 1825, at Bushey Heath. These amount to twenty-five, and the results are given both in Bushey and Greenwich, mean time.

There was also read, a communication from Major J. A. Hodgson, of the 61st Bengal Native Infantry, Revenue Surveyor-General, residing at Futty Ghur on the Ganges. This letter records 75 observations of the eclipses of Jupiter's satellites, made at Futty Ghur (latitude 27° 21′ 35″ N.) in the autumn of 1824, and spring of 1825. Some of these observations were made by Major Hodgson himself, and others, under his superintendence, by young men who are his apprentices in the Revenue Survey Department. The names of the several observers are given:—each observation has its appropriate meteorological indications registered; and the natures, powers, and qualities of the telescopes employed are respectively described. These observations, compared with corresponding observations of the same phenomena in places whose longitudes have been accurately ascertained, will serve to determine the longitude of Major Hodgson's observatory.

French Patents.

GRANTED in OCTOBER, NOVEMBER, and DECEMBER, 1825.

(*Continued from Vol. XI. Page* 161.)

To Alexander Nasmith, Paris, for a method of fixing artificial teeth—5 years.

To Laforest Berryer, Fils, and Co. Paris, for a process to manufacture paper from the hemp or flax stalks—10 years.

To Mordaunt Levien, Paris, for a musical instrument, called "Harpe-guitare"—5 years.

To Jaques Victor Bouchy, Paris, for a machine to manufacture wire nails—15 years.

To Adolph Bertrand, Bordeaux, for a process to prepare turpentine—15 years.

To Wattelar Wattredot, Lille, for a machine to be applied as a power to machinery—5 years.

To John Roberts, St. Helens, near Liverpool, England, for an apparatus to preserve respiration in dense smoke, or deleterious gases—5 years.

To Lepetit Lamassure, and Fils, Rouen, for a pipe (Tuyière) for casting furnaces, to save fuel and obtain a greater quantity of iron—5 years.

To Dominique Antoine Mondini, Paris, for a machine to break and sift plaster, cement, &c.—5 years.

To Sequin Montgolfier and Dayme, Lyons, for an improvement in the mode of towing boats up rivers—15 years.

To John Newton Ford, Rouen, for a process of manufacturing printing rollers—15 years.

To Josephine Decomberousse, Lyons, for an improved process for lythographic printing—10 years.

To Lupin and Co. Paris, for a machine to comb wool, called "Vaudoise"—15 years.

To Jean Laune, Jornac, for an economical process to heat furnaces with coal—5 years.

To Antoine Rouqueriol, Lunel, for a distillery apparatus, to measure the quantity of alcohol contained in wine—5 years.

To Le Tort, Paris, for a process to print on glass, called "Veined Glass Marble"—10 years.

To Ph. Claude Valerius, Paris, for an improvement in bandages without straps—10 years.

To Benjamin Rotch, Paris, for a new "Lancette" with springs—10 years.

To Jean Pierre Chauvey, Vesoul, for an engine to raise water—5 years.

To Onisiphore Pecquir, Paris, for a new gearing of a toothed wheel, with a chain—10 years.

To Marie Balastron, Paris, for a machine to rule paper—10 years.

To Sophia Lainé, Paris, for a process to manufacture gelatine from bones—5 years.

To James Thomas Walker, London, for a method to propel boats on rivers and canals—10 years.

To Peter Constant Delavigne, Paris, for articulated shoes, boots, &c. and impermeable soles—5 years.

To Jacques Joseph Plomtuer, Paris, for an improvement in fire-arms, called "Pauly's System"—5 years.

To Joseph Bressy, Paris, for spectacles, called "Rostrales"—10 years.

To Joseph Cambaûrès, Paris, for improvements in the manufacturing of wax candles—15 years.

To F. P. Labarre and C. Grenier, Paris, for a portable machine to saw and polish marble—10 years.

To Antoine Oudier, Delivani and Fils, Châlons sur Saone, for a method to propel boats and vessels—5 years.

To Pleyel Pere and Fils, Paris, for a pianoforte, with a single cord, called "Piano Renicorde"—5 years.

To Silvestre Rietf, Colmar, for a process or machinery to spin hemp and flax—10 years.

To Jean Baptiste Laignel, Lyons, for a system of navigating on rapid rivers—15 years.

To Ayme, Fils, and Philipp, Tarascon, for a hydraulic machine moved by the wind—5 years.

To Francois Jacobs, Paris, for a shoe or sandal—5 years.

To P. F. Simonnet, Paris, for a machine to manufacture several sorts of purses—10 years.

To Bienjaimé Fournier, Amiens, for an instrument, called an "Improved Métronome"—5 years.

To Delisle, Lille, for a steam boat for shallow rivers—15 years.

To Laforest, Berryer, Fils and Co. Paris, for a process of manufacturing paper, rom hops, nettles, Turkey corn, &c.—15 years.

To M. de Thiville, Paris, for a water wheel—5 years.

To Henry Pape, Paris, for a pianoforte *without* cords—10 years.

To Charles F. Brasseux, Paris, for a seal of 50 sides or faces—5 years.

To Herbit Tavernier Père and Fils, Amiens, for a process to manufacture velvet with two faces—5 years.

To Emilie Grimpé, Paris, for a mechanical process to engrave printing rollers —10 years.

To Remi Droz, Charleville, for a "Cadrature" applicable to repeating watches—10 years.

To Vernet and Gaurvin, Paris, for a method to obtain steam as power, *without* ebullition—15 years.

To John Collier, Paris, for a mechanism to draw the carriage of a spinning mule-jenny—10 years.

To Laforest, Berryer, Fils and Co. Paris, for a hemp and flax break—15 yrs.

To D'Hennin, Paris, for a washing mill, to wash cinders, &c.—10 years.

To Laurent Richard, Paris, for a method to drive boats up rivers by the current of the water itself—15 years.

To Porry, Signoret and Co. Marseilles, for a machine for distilling and purifying sulphur—10 years.

To Joanne Frères, Dijon, for a method to drive boats against the currents of rivers, applicable also to steam carriages—15 years.

To Marianne Anne Chardron, Charleville, for a fulling mill for cloth, &c.— 15 years.

To Lebouyer de St. Gervais, Paris, for a ventilator, acting by impulsion and aspiration—10 years.

To Monnit and Fils, Grand Galleyrgus, for a distilling apparatus for wines &c.—10 years.

To Jean And. Tartwin, Alaís, for a mechanism to draw silk from the "Cocons"—10 years.

To Jean Kettishoven, Paris, for metallic sandals—10 years.

To Ledru de Bethune, Paris, for an economical stove grate—5 years.

To Fournier, Paris, for children's caps, called "Hygieniquis"—5 years.

To John Edward Johnson, Paris, for portable affiches—10 years.

To Rissler Frerès and Dixon, Cernay, for a mechanism applicable to the carriage of a mule-jenny—10 years.

To Leger, engraver, Paris, for matrices, moulds, and types—10 years.

To Don Marco Carlotti, Paris, for a system and mechanism, to stereotype music, called "typo-melography"—15 years.

To Richard Badnall, England and Paris, for a mechanism to reel silk, cotton, &c.—15 years.

To Simonard, Lyons, for a system of mechanism to propel boats against the current by the means of that current—15 years.

To Ernest Alban, Rostock, for an apparatus to generate steam—15 years.

To Badnal and Fils, Leek, England, for a mechanism to throw double and twist silk, and other materials—15 years.

To J. A. Chiavassa, Paris, for a skreen, with double glasses and hinges— 5 years.

To Simonard, Lyons, for a mechanism to propel boats against the current, (addition to the above patent)

To P. A. Lemare, Paris, for a steam apparatus for cooking—10 years.

To Jacquot and Geets, Paris, for a process to dress hats—10 years.

To A. Picquet, Paris, for an improved construction of snuffers—5 years.

New Patents Sealed, 1826.

To John Bellingham, of Norfolk-street, Strand, in the County of Middlesex, civil engineer, for his newly invented improvement or improvements in the construction of cooking apparatus—18th April—2 months.

To James Rowbotham, of Great Surry Street, Blackfriars-road, in the county of Surry, hat manufacturer, and Robert Lloyd, of No. 71, Strand, in the county of Middlesex, for their having invented or found out a certain method of preparing, forming, uniting, combining, or putting together a certain material, substance, or thing, or certain materials, substances, or things, for the purpose of being made into hats, caps, bonnetts, cloaks, coats, trowsers, and for wearing apparel in general, and various other purposes—18th April—6 months.

CELESTIAL PHENOMENA, FOR MAY, 1826.

D.	H.	M.	S.	
1	0	0	0	♃ Stationary.
1	8	51	18	♃'s 1st Sat. will emerge.
6	41	16	0	Ecliptic Conjunction or ● New Moon.
6	16	0	0	♀ in conj. with A in Tau.
7	0	0	0	☿ Stationary.
7	20	0	0	☽ in conj. with A in Tau.
8	0	0	0	☽ in conj. with ♀ long. 24° in Gemini ☽ lat. 0° 0′ ♀ lat. 13′ N. diff. lat. 13′
8	6	0	0	☽ in conj. with 2 κ in Tau.
8	10	45	53	♃'s 1st Sat. will emerge.
8	19	0	0	♂ in conj. with 2 α in Lib.
9	0	0	0	☽ in conj. with ι in Taurus.
9	12	0	0	☽ in conj. with ♄ long. 20° in Gem. ☽ lat. 1° 38′ S. ♄ lat. 1° 5′ S. dif. lat. 33′
9	16	0	0	☽ in conj. with ζ in Taurus.
10	15	0	0	☽ in conj. with ν in Gem.
10	17	0	0	♀ in conj. with 2 η in Tau.
13	12	0	0	☽ in conj. with 1 α in Can.
13	14	0	0	☽ in conj with 2 α in Can.
14	12	12	0	☽ in □ first quarter.
15	12	40	29	♃'s 1st Sat. will emerge.
18	16	0	0	☽ in conj. with i in Virgo.
20	20	0	0	☽ in conj. with κ in Libra.
21	0	0	0	☽ in conj. with λ in Libra.
21	3	16	0	Ecliptic opposition or ○ full moon.
21	4	8	0	☉ enters Gemini.
21	5	0	0	☾ in conj. with 1 β in Scor.
21	5	0	0	☾ in conj. with 2 β in Scor.
22	9	0	0	☾ in conj. with ς in Oph.
23	5	0	0	☾ in conj. with 1 μ in Sag.
23	6	0	0	☾ in conj. with 2 μ in Sag.
23	13	0	0	♄ in conj. with ζ in Taurus.
24	6	0	0	☾ in conj. with *d* in Sagitt.
24	9	3	48	♃'s 1st Sat. will emerge.
24	14	0	0	♀ in conj. with ♄ long. 22° in Gem. ♀ lat. 58′ N. ♄ lat. 1° 3′ S. diff. lat. 1° 56′
25	9	0	0	☾ in conj with β in Cap.
28	1	46	0	☾ in □ last quarter.
31	10	58	28	♃'s 1st Sat. will emerge.

The waxing ☽ moon—the waning ☾ moon.

Rotherhithe. J. LEWTHWAITE.

1826.	Thermo.		Barometer.		Rain in inches.	1826.	Thermo.		Barometer.		Rain in inches.
	Higt.	Low.	+	—			Higt.	Low.	+	—	
MAR.						APRIL.					
26	39	32	29,83	29,67		10	56	38	29,94	29,86	,025
27	43	28	29,90	29,86		11	61	43	29,80	29,71	,425
28	51	30	29,80	29,67		12	49	46	29,27	29,17	,2
29	47	42	29,70	29,55		13	56	42	30,10	30,02	
30	51	29	30,12	29,90		[illegible]	65	45	30,20	station	
31	55	25	30,20	30,19		15	68	46	30,20	station	
APRIL.						16	56	48	30,20	30,06	
1	59	25	30,26	30,19		17	68	34	30,24	30,22	
2	56	37	30,07	30,02	,025	18	58	28	30,22	30,17	
3	63	45	30,13	30,07		19	64	33	30,12	30,02	
4	58	36	30,10	30,07		20	63	33	29,90	29,70	
5	58	46	30,03	station.		21	66	32	29,54	29,70	
6	62	44	30,10	30,06		22	68	47	29,76	29,60	
7	66	45	30,16	30,03		23	53	42	29,80	29,70	
8	69	41	30,15	30,06		24	50	30	29,90	29,88	
9	65	45	29,80	29,70		25	51	29	29,96	29,90	

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37′ 32″ N. Long. 0° 3′ 51″ W. from Greenwich.

METEOROLOGICAL JOURNAL, MARCH AND APRIL, 1826.

1826.	Thermo.		Barometer.		Wind.	Weather.
	Max.	Min.	Morn.	Even.		
MAR.						
25	41	34	29,60	29,58	N. E.	Cloudy—wind, and slightly snow.
26	40	31	29,61	29,75	N. E.	Stormy—ditto—ditto.
27	44	29	29,76	29,77	N. E.	Frost—fair—clear—wind.
28	53	34	29,66	29,49	S. W.—W.	Fair—clear—wind.
29	45	33	29,44	29,61	W.—N. W.—N.	Ditto—ditto—ditto.
30	48	32	29,80	30,03	N.	Ditto—ditto—ditto—frost.
31	52	32	30,11	30,14	N.	Ditto—ditto—ditto—ditto.
APRIL.						
1	54	34	30,14	30,00	W.	Ditto—ditto—ditto.
2	51	44	29,90	29,93	W.	Cloudy—slight showers.
3	62	50	29,95	30,00	N. W.	Fair—clear—brisk wind.
4	56	50	29,97	29,94	N. W.—W.	Ditto—cloudy—ditto.
5	58	48	29,92	29,90	N. W.—W.	Ditto—ditto—ditto.
6	63	50	29,94	29,89	W.	Ditto—ditto—ditto.
7	63	51	29,93	29,98	W.	Fair—sun and clouds.
8	62	54	29,97	29,85	W.—S. W.	Ditto—cloudy.
9	67	49	29,65	29,61	S. W.—W.	Sun—showers and high wind.
10	58	44	29,70	29,73	W.	Fair—clear—ditto.
11	63	49	29,65	29,55	W.—S. W.	Sun and showers—ditto.
12	60	44	29,00	29,54	W.—N. W.—N.	Rain $\frac{1}{8}$ inches and high wind.
13	58	44	29,90	29,93	N.—N. W.—W.	Cloudy—fair.
14	63	50	30,00	30,02	W.	Fair—clear—brisk wind.
15	63	50	30,03	29,90	W.—S. W.	Ditto—cloudy—ditto.
16	68	46	29,94	30,05	N.W.—N.	Cloudy—slight showers.
17	53	43	30,07	30,05	N.—N. E.	Ditto—fair.
18	59	41	30,05	29,97	N.—S. W.	Fair—clear.
19	58	45	29,93	29,85	S. W.	Ditto—ditto.
20	61	41	29,75	29,52	S. E.—E.	Ditto—ditto—thunder—flash lights.
21	64	44	29,51	29,52	S.	Ditto—sun—clouds.
22	66	47	29,50	29,60	S. W.—N. W.	Cloudy—rain $\frac{1}{18}$ inches, at night.
23	55	41	29,61	29,68	N.—W.	Ditto—fair.
24	55	40	29,73	29,78	N.—N. W.	Sun and clouds.

HITCHEN, HERTS. W. PERKS.

Lat. 51° 56′ 20″ N. Long. 0° 16′ 30″ W. from Greenwich.

LITERARY AND SCIENTIFIC NOTICES.

Botany.—A second number of a work, published at Batavia by Dr. Blume, on the Plants Indigenous to the Dutch Possessions in India, has recently arrived in Europe. It is said to be highly interesting, and contains the natural history and description of one hundred new plants, found in the island of Java, with accounts of their principal physical properties, and of their domestic use.

The first number of a new Graphic Work, entitled "the Ports of England," which will contain two Views, one of Whitby, the other of Scarborough, is announced as being nearly ready for publication. The Views will be engraved in the Mezzotinto style, from Drawings by J. W. Turner, R. A. and will comprise all the licensed chartered ports of England.

Nearly ready for pubiication, in a quarto volume, "A Winter in Lapland and Sweden, with various Observations relating to Finmark and its Inhabitants, made during a residence at Hammerfast, near the North Cape. By Arthur de Capell Broke, M.A. F.R.S. &c. The work is to be embellished with thirty Engravings and a large Map.

New kind of Fodder.—Mr. Moorcroft, who is now travelling in higher Asia, has transmitted to the East India Company the seeds of a foddering plant indigenous in Braz, on the borders of India and China. It is called *prangos*, and approaches the genus cachrys. If we can believe half the wonders attributed to this plant by the Hindoos, the acquisition of it is of great importance. It seems certain that it affords great nourishment for cattle, and requires little care for its propagation. It fattens flocks of sheep in a very short time; and, it is said, cures the hepatic flux, and the rot, which is so fatal after the autumnal rains. It is a herbaceous perennial plant of the umbelliferous family.

Number V. of Select Views in Greece, by H. W. Williams, has been lately published, and in its pages will be found some of the magnificent remains of ancient Greece, pictured with great taste and excellence. This number is pre-eminent over what has yet been published of Mr. Williams's much admired collection. The representation of the Academic Grove of Athens is very fine and appropriately enriched by the introduction of figure. Mount Oleus is very spirited. Part of the Temple of Minerva is an imposing ruin. Misitra is an excellent picture of the country, its buildings and landscapes; and Livadia, &c. equally admirable, though very unlike in composition. The Engravings are by Lizars, J. Horsburgh, and W. Miller, and do them the highest credit.

Russia.—The Agricultural Society of Moscow, over which Prince Galatzin presides, and to which the late Emperor Alexander gave a considerable grant of land near Moscow, for the purpose of establishing a farm, is going on very prosperously. It already contains in its school above eighty pupils from various parts of Russia, even from Kamschatka; and the journal of its proceedings has been so popular, that it has been found necessary to reprint the volumes of transactions for the first two years.

Navigation of Rivers.—A machine has been constructed by A. M. Laguel, and is now said to be at work on the Rhone, by which he contrives to tow vessels against the tide, at the rate of three quarters of a league in the hour; the ordinary rate of vessels towed by horses against tide being two leagues and a half or three leagues a-day. The inventor has presented a model of his machine, to the scale of an inch to a foot, to the French Academy of Sciences.

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No. LXVIII.

Recent Patents.

To William Hirst *and* John Wood, *both of Leeds, in the County of York, Manufacturers, for their Invention of certain Improvements in Machinery for Raising or Dressing of Cloth.*

[Sealed 7th July, 1824.]

This invention is an improvement in the construction of gig mills or gigging machinery for scouring the surfaces of woollen and other cloths, which improvements consist in the adaptation of a second cylinder or barrel, applied to a gigging machine and in certain gear connected therewith, for the purpose of combining the action of both cylinders, by which contrivances the second cylinder or barrel is caused to revolve with the first, and either in the same direction or the contrary way, at the pleasure of the operator, both cylinders or barrels being

at work on the same side of the cloth at one time, for the purpose of more perfectly drawing out the pile of the cloth than is done by the ordinary gigging machines, and if required, of raising the pile in two directions by the same operation.

The invention also extends to a mode of drawing the cloth with any degree of tension against the gig barrels, and causing it to embrace a greater or less portion of their surfaces, and consequently to be more or less powerfully acted upon by the teasles, without interfering with the general rotatory action of the gig barrels: the tension of the cloth being produced by several rollers bearing against it, which are slidden in and out by means of racks and pinions.

This invention has subsequently been further improved, which improvements form the subject of a more recent patent, and as the machinery in both instances are alike, with the exception of some trifling additions in the second, we have thought it advisable to explain the details of the apparatus, with reference to the graphic figures accompanying the latter specification which immediately follows this.

[*Inrolled, January,* 1825.]

To WILLIAM HIRST *and* JOHN WOOD, *both of Leeds, in the County of York, Manufacturers, and* JOHN ROGERSON, *of Leeds, aforesaid, Millwright, for their Invention of certain Improvements in Machinery for Raising and Dressing Cloth.*

[Sealed 1st October, 1825.]

THE patentee states that these improvements in ma-

chinery for raising and dressing cloth, consist in certain additions to the apparatus described in the specification of a former patent, bearing date the 7th July, 1824, (see the preceding.) That the leading features of the said former invention were the combination of two cylinders or gig barrels together in one machine, with the necessary gear for actuating them, and the employment of certain rollers, with pinions and racks, for the purpose of pressing the cloth against the surfaces of the gig barrels: and the modes of regulating and adjusting the same, in order to bring a greater or less portion of the cloth in contact with the gigs; and also to make it bear upon the teasles with any required pressure.

The present improvements upon the before mentioned machinery, are the introduction of certain rollers, and the gear connected thereto, by means of which contrivances the surface of the cloth may be brought in contact with the backs of both the gig barrels as well as their fronts, and thereby produce double the effect of the former machine; which improvements will be fully understood by reference to the general construction of the machine exhibited in Plate XIV. where the improvements contemplated under the former patent as well as those of the present are seen.

Fig. 1, is a front view of the machine, shewing the two gig barrels, covered with teasles, and the rollers with the toothed wheels, by which they are actuated. Fig. 2, is the right hand end of the machine, with the wheels and other gear more perfectly exhibited, and fig. 3, is a representation of the left hand end of the machine, with the piece of cloth shewn by dots passing over the rollers, and in contact with both sides of the gig barrels; the letters of reference respectively marking the same parts of the machinery in all the figures.

The vertical shaft, *a*, with its horizontal bevel wheel, *b*, receiving rotatory motion from a steam engine, or any other first mover, actuates the bevel wheel, *c*, from whence rotatory motion is communicated to the machinery by the sliding clutch or coupling box, *d*, locking it to the axle of the lower gig barrel, *e*. At the reverse end of the axle of the lower gig barrel is affixed the toothed wheel, *f*, which takes into a similar toothed wheel, *g*, that slides loosely upon the axle of the upper gig barrel, *h*, and when the axle of the upper gig barrel is locked to this wheel, *g*, by the sliding clutch, *i*, then the two gig barrels revolve together in opposite directions; but when the clutch, *i*, is withdrawn, the wheel slides round its axle and the upper gig barrel remains quiescent.

At the right hand end of the axle of the lower gig barrel the toothed wheel, *k*, is affixed, which takes into an intermediate toothed wheel, *l*, and this into a similar toothed wheel, *m*, sliding loosely round the axle of the upper gig barrel; hence when the clutch, *n*, which slides upon the square part of the axle is made to lock to the wheel, *m*, and the clutch, *i*, at the reverse end is unlocked, the two gig barrels are made to revolve together in the same direction.

The cloth to be operated upon, (as shewn by the dots in fig. 3,) is first passed over the roller, *o*, and stretched smoothly breadthwise, from thence it is carried downwards, and conducted under and over the rails, *p*, *p*, which are intended to give it tension, and then under the roller, *q*, after which it proceeds upwards with the face of the cloth next the gig barrels, and over the rollers, *r*, *r*, at top, from whence it is conducted down at the back of the machine, and under the rollers, *s* and *t*, to the pair of drawing rollers, *u*, and is then let fall on to

the inclined scray, where it slides down to the floor, and from the floor is drawn up as above described, its ends being joined together in a continuous or endless web.

The series of drawing and conducting rollers are made to revolve by a train of wheels, which are actuated by a pinion, *v*, upon the axle of the wheel, *l*. As this wheel revolves by the means above described, the pinion, *v*, takes into and turns a spur wheel, *w*, and this spur wheel actuates a toothed wheel, *x*. On the axle of this toothed wheel, *x*, a bevel pinion is fixed, which takes into another bevel pinion, *y*, upon the vertical shaft, *z*, *z*, and hence causes that shaft to turn.

At the upper and lower extremities of the shaft, *z*, similar bevel pinions are attached, which take into corresponding bevel pinions, upon the right hand end of the axles of the back rollers, *r* and *s*, and communicate to those rollers rotatory motion. At the left hand end of the axle of the back roller, *r*, a toothed wheel, 1, is affixed, which takes into an intermediate wheel, 2, and this into a similar wheel, 3, at the end of the axle of the front roller, *r*, thus the two rollers, *r*, are made to revolve together.

To the right hand extremity of the axle of the front roller, *r*, a toothed wheel, 4, is attached, which turns with it and takes into an intermediate wheel, 5, and this into a smaller toothed wheel, 6, fixed to the end of the roller, *o*. There is also attached to this roller, *o*, a rigger, 7, with a band leading to another rigger, 8, upon the axle of the lower drawing roller, *u*. Hence it will be perceived that all the drawing and conducting rollers are actuated by the pinion, *v*, through the train of wheels, and that as the gig barrels revolve, the cloth continues traversing round the machine in an endless web, in the manner shewn in fig. 3.

In order to regulate the force with which the cloth shall be pressed against the gig barrels, a series of rollers, 9, 9, 9, 9, 9, and *q*, are introduced mounted in sliders, 10, 10, 10. A portion of each slider is formed into a rack, in which a small pinion acts, and at the end of the axle of each pinion is a small bevel toothed wheel, 11, 11, 11. At the right hand end of the machine a vertical rod, 12, 12, is placed, upon which there are bevelled pinions taking into the bevelled wheels, 11, and on turning the rod by the handle, 13, all the bevelled wheels and their pinions will be simultaneously turned, by which means the racks with the sliders will advance or recede, and the rollers, 9, be drawn inward or outwards, so as to give a greater or less tension to the cloth, and cause it to extend over and press more or less against the periphery of the gig barrels. To assist the tension, a roller, 14, is placed at top of the machine, and also a roller, 15, at the under part of the machine, which is supported in pendant arms. These two last mentioned rollers and also the roller, *t*, and the six tension rollers, 9, 9, 9, 9, 9, and *q*, turn only by the friction of the cloth pressing against them as it passes.

Having now particularly described the construction of the machinery for dressing or raising of cloth, with the view of illustrating the objects and peculiar features of the improvements, we proceed to point out those parts of the machinery claimed under the first patent, and those claimed under the present patent. Under the former, the patentees claim the adaptation of the additional cylinder or teasle barrel, working on the same side of the cloth, and at the same time with the ordinary barrel, and the necessary gear or other apparatus, by which the said barrel is made to revolve by the rotation of the ordinary barrel, and in the same direction with it, or in the opposite direction at pleasure, and in the apparatus, consisting

of rollers, racks, and pinions, as described for drawing the cloth closer towards, and causing it to extend over a greater part of the periphery of the gig cylinders. Under the second patent, they claim the introduction into a gigging machine of a series of guide rollers, and the gear for actuating the same, by which the cloth may be made to traverse in contact with the back as well as the front of the gig barrels, and thereby be submitted to the operation of the teasles on both sides of the machine at the same time. By means of these contrivances, they state that they are enabled to raise the pile of cloth more perfectly than by the old method, and to employ a lighter pressure, which saves half the consumption of teasles, by not wearing them so hardly, and the pile is only raised from the surface of the cloth, which produces a finer and softer face.

[*Inrolled, April,* 1826.]

To John M'Curdy, *of Cecil Street, Strand, in the County of Middlesex, Esq. for his Invention of certain Improvements in Generating Steam.*

[Sealed 27th December, 1825.]

This invention appears to be the construction of a boiler for generating steam by the combination of a series of tubes, but with some peculiarities which the patentee considers to be new and important. He says that his invention "consists in a new combination of materials, or the adaptation and application of old and well known

substances, to produce or effect a particular purpose, which is both novel and useful, and which from their form I denominate FRANKLIN'S DUPLEX STEAM GENERATORS."

This boiler is to be constructed of any number of cylindrical vessels of any suitable diameter and length, which must be determined according to the size of the engine to be worked, or in other words to the quantity of steam required. These vessels are to be of wrought or cast iron, or other material, capable of affording sufficient strength. Within each of the tubes there is to be another tube of similar form, fitting nearly to its internal surface, but leaving a very narrow channel between the two for the passage of water or steam, the inner tube being secured in its position, within the outer one by means of small blocks, ribs, or slips of metal placed between, in straight or winding directions, or the two surfaces may be retained in their desired positions by bolts passed through them and riveted or otherwise.

Any number of tubes so constructed are to be arranged in an ordinary furnace, in a similar manner to gas retorts, as exhibited in plate XIV, fig. 4, which is a cross section of part of a furnace, with the tubes placed therein, in what is considered to be the most advantageous manner for heating. Fig. 5, is a front view of the furnace, exhibiting the ends of the tubes, with the connecting pipes flanged and bolted on, by which the steam and water ways are continued from one tube to the other. The water is to be injected by means of a force pump *a*, into the first tube *b*, and to pass along the narrow channels through that tube, as shewn by the arrows in the horizontal section, fig. 6, into the next tube *c*, by means of the connecting pipe *d*, and so on until the water has traversed through the whole range of tubes, and in its

progress become partially or entirely converted into steam.

At the end of the range a larger tube, *s*, called by the patentee a *steamometer*, is placed in the upper part of the furnace. It contains within it an open vessel, *y*, (see fig. 6,) which is intended to receive the steam and become a reservoir. This steam chamber being placed above, enables the most intense heat of the furnace to act upon the other vessels below, where the steam is first generated. From the reservoir, *y*, the steam is allowed to pass by a pipe, *w*, fig. 4, to the induction valve of the engine, and the capacity of the reservoir is proposed to be equal to about ten times that of the working cylinder.

The patentee remarks, that he inserts the steam pipe, *w*, "into the lower part of the steamometer, whereas in boilers the steam is carried out at the top." He further states that "a number of the *duplex generators* may also be connected with the common boiler for the generating of steam, the water being forced through them by the pump, and discharging into the steam chamber of the boiler, in lieu of the steamometer."

"The patentee claims as original, first, in the GENERATORS, the combination of the materials, or tubes or vessels to produce the desired effect, by inserting or placing one vessel or tube within the other, in such a manner as to expose a small quantity of water over a large heated surface, by leaving a very minute space or passage between the outer and inner tubes or vessels, *the whole length as well as the two ends*. Secondly, the leaving open one end of such number of interior tubes or vessels as may be necessary in the steamometers or reservoirs for steam to produce the desired effect. Thirdly, the STEAMOMETERS, or separate vessel for containing the

steam, ***with the eduction-pipe placed in the lower part,*** to prevent the possibility of any accumulation of water. Fourthly, the rings or spiral bands around the inner tubes or vessels, or pins filling the space at intervals between the outer and inner tubes or vessels to produce the water-line.

The advantages of this plan are, that the water being distributed in a thin sheet over a great heated surface, and exposed to the almost immediate action of the fire, in the duplex generators, the steam is generated with immense rapidity; there is no collection or body of water as in a boiler; they occupy but a small space, and consume but little fuel in proportion to boilers to produce the same power; the steam may be generated to the greatest height, and the power increased at pleasure, *without danger*."

The patentee further remarks, "In consequence of the small space between the outer and inner tubes or vessels being always preserved, there can be no accumulation of water, the current being constant along the water-line; nor would the diameter of the generators cause any difference in this respect, the water-line being so minute and uniform.

The generation of the steam is rapid and instanstantaneous, and no greater quantity of water can be contained in a set of the duplex generators, however numerous, than is contained in the space between the outer and inner tubes, up to the height where the connecting pipes are inserted; whereas, if the steam was generated in open or single vessels, the current of steam and water through them would be destroyed, the water by its own gravity (the pressure of the steam being equal on all sides) would fall to the bottom of the vessels, and of course not act on the upper or most extensive surface

of them; by this means they would soon fill with water, and become only boilers at best; a great part of the water would pass into the engine without being turned into steam, and thus clog its operation and decrease its power.

"The quantity of water injected into the duplex generators may be regulated by a stop cock, placed on the pipe leading to the well, or place from whence the supply of water is obtained, and a cock may be inserted into the lower side of the steamometer, to ascertain whether the pump throws too much water into the generators."

The patentee further observes, "that a number of vessels constructed double, and flattened so as to bring the two sides nearly together, leaving a thin space between for a water-line, without any *interior* vessels, and connected together at the ends in a similar manner, leading into a common steamometer, would be the same in *principle*, and produce steam in a similar way; they are not so strong, however, as cylindrical vessels, they are not more difficult to connect at the ends, and in the middle would be liable to expand and destroy the effect of the combined rush or current through them."'

The patentee lastly remarks, "that the exterior tubes or vessels may be shielded with fire clay, or other material, to render them more durable; and to prevent the destruction of the vessels by oxidation, and also, that the interior tube or vessel in the steamometer is not indispensable."

[*Inrolled, April,* 1826.]

To JOSIAH EASTON, *of Heal Cottage, in the Parish of Bradford, in the County of Somerset, Esq. for his Invention of certain Improvements in Locomotive or Steam Carriages, and also in the manner of constructing the Roads or Ways for the same to travel over.*

[Sealed 13th October, 1825.]

THESE improvements consist, first, in forming a line of road, with a raised part along the middle, upon which a rack or toothed bar of iron is placed; and, secondly, in adapting a toothed wheel to the steam carriage, which shall take into the said rack, and being actuated by the rotatory power of the steam engine, shall thereby cause the carriage to be impelled forward upon the line of rail road, and the trams or other waggons after it.

Plate XV. fig. 5, represents a cross section of the rail road, with a tram waggon upon it; fig. 6, is a side view of the same, shewing the manner in which the carriage is driven; *a, a,* is the road formed by masonry, the parts *b, b,* on which the running wheels of the locomotive engine and the carriages traverse being level, but the central part of the road is raised, and upon it is a rib or line of masonry, *c,* carrying the rack, *d.* The steam engines that actuate the wheels of the locomotive carriage, are constructed and adapted to the other machinery in the usual way; the only novelty in the locomotive carriage is the toothed wheel, *e,* which takes into the rack, *d,* fixed along the centre of the road, and this toothed wheel being made to turn by means of the rotation of a train of toothed wheels, connected to the engine; the carriage is

thereby impelled forward, and the trams or other waggons drawn after it.

In order to keep the carriages in their proper track upon the road, two guide rollers, *f*, *f*, are placed under the carriage, which run against the sides of the central rib, and thereby confine the running wheels to their tracks, *b*, *b*.

As the employment of a rack upon a line of rail road for the purpose of receiving the teeth of a rotatory wheel, and by its resistance driving the carriage forward, has been long in use, particularly in the neighbourhood of Leeds, the invention claimed under the present patent is, we presume, limited to the central position, in which the rack is placed upon the rail road, and to the particular situation of the wheel which takes into it.

[*Inrolled April*, 1826.]

To HENRY KING, *of Norfolk Street, Commercial Road, in the County of Middlesex, Master Mariner, and William Kingson, of the Royal Dock-yard, Portsmouth, in the County of Hants, Master Millwright, for their invention of and discovery of certain improved Fids for Top Masts, Gallant Masts, Bowsprits, and all other Masts and Spars, to which the use of the Fid is applicable.*

[Sealed 26th November, 1825.]

THIS invention is a mode of fixing the top-mast, and top-gallantmast of a ship to the lower mast at the junction of the tressel-trees and cross-trees, which in nautical

language is called fidding the mast, and is usually done by passing a bar, called the fid, through a hole in the lower part of such masts. But in foul weather, and under many other circumstances, when it becomes necessary to strike the upper masts expeditiously, the operation of unfidding is attended with very considerable difficulty and danger to the men, several of whom are compelled to ascend into the rigging, in order to withdraw the fid, and that can only be done by first slacking the ropes, and raising the mast by means of tackling, so as to release the fid. These improvements have, therefore for their object a more convenient and expeditious mode of fidding and unfidding such masts than has heretofore been practiced, and which is performed upon the improved plan of fidding, without the necessity of first slackening the ropes.

In order to effect this the patentees have invented several modes of adapting sliding bolts or wedges, which are intended to pass into the fid hole on each side of the mast, and to bear against the under side of the fid plate, when in the act of supporting the mast. These bolts or wedges have inclined planes at or near their points of bearing, and when liberated (by withdrawing a screw or other fastening,) the bolt or wedge is enabled to slide back out of the fid hole, by the weight of the mast bearing upon its end, by which means the mast is immediately set free from the fid, and is then allowed to pass down between the cross-trees and tressel-trees.

In plate XV. fig. 1, represents the first mode proposed of effecting this object; *a, a*, is the lower mast of a ship, or other vessel, to which the tressel-trees *b, b*, and cross-trees, *c, c*, are affixed in the ordinary way; *d, d*, is the upper mast (shewn in section) slidden through the square aperture between the tressel-trees and cross-trees;

and having a perforation through it called the fid-hole, with an iron plate, *e*, called the fid-plate.

The mast is held up in its erect position by two wedge pieces *f*, *f*, bearing against the fid plate *e*, and upon a bar *g*, which may be called the fid, passed through the fid-hole, and resting upon the tressel-trees. Behind the wedge pieces, *f*, there are pieces, *h*, *h*, introduced, in order to keep the wedge pieces from sliding back, when the mast has been thus fidded.

On preparing to unfid the mast, two men only are necessary to perform the operation, which is done by first withdrawing the two small looking pieces, *h*, *h*, and then if the weight of the mast is not sufficient to push the wedge pieces *f*, down the inclined planes, *g*, the screws, *i*, *i*, are to be turned, the points of which bearing against the ends of the fid plate, cause the wedge pieces *f*, *f*, to recede upon the inclined planes of the bar *g*, and thereby allow the mast, *d*, to descend, so as to hang in the bearing tackle, which has been previously attached to the mast, and passed through a sheave at bottom, when the fid bar being released, may be readily withdrawn, and the mast lowered by ropes as usual. The fid, *g*, is proposed to be made of iron, but if of sufficient substance may be of wood; in which case its upper surface must be shod with plate iron.

Fig. 2, is another contrivance for fidding and unfidding masts, which consists principally in the employment of two sliding bolts, for supporting the upper mast; *a*, *a*, is the lower mast; *b*, *b*, the tressel-trees; *c*, *c*, the cross-trees; *d*, *d*, is the upper mast, shewn in section. Upon each of the tressel-trees an iron box, *e*, is affixed, for the purpose of receiving the sliding bolts, *f*, and their screws, *g*. The mast being raised by the top tackling, in the usual way, into its situation, the bolts, *f*, are both forced

up into the fid-hole, by turning the screw *g*, as at A, and by the points of the bolts, *f*, bearing against the fid plate, the mast is supported and confined in its elevated situation, or, as it is technically called, fidded.

When it is intended to unfid the mast, the bolts, *f*, are withdrawn from the fid holes, as at B, by turning the screws, *g*, the contrary way; and the support, that is, the fid being thus removed, the mast then hangs in the bearing tackle, or top ropes, and is lowered as usual.

Fig. 3, represents another mode of adapting the sliding bolt fid; *d*, is the upper mast; *b*, the tressel-trees; *e*, *e*, iron boxes affixed to the tressel-trees, for the purpose of securing the sliding bolts, *f*. The point of the bolt is seen at A, passed into the fid hole, and supporting the mast by the fid plate resting upon it. The heel of the bolt is intended to stop against a rebate in the under part of the box, and the bolt is confined in that situation by a screw, *g*, pressing upon its tail.

When it is required to unfid the mast, the screw, *g*, must be turned, so as to allow the tail of the bolt to rise sufficiently for the heel to pass over the rebate, by which means the point of the bolt will have assumed an oblique angle to the fid plate, and the mast bearing upon it, in that situation, will then exert sufficient force to slide the bolt back in its carriage, and liberate the mast.

Fig. 4, exhibits the sliding bolt fid, last described, with a tail screw and a sliding guide adapted in a different way to the foregoing contrivance.

In this fig. *a*, *a*, is the lower mast, *d*, *d*, the upper mast, supported on one side, as at A, by the end of the sliding bolt being passed into the fid hole; *b*, *b*, are the tressel-trees, on which are affixed the iron carriages, *e*, for the bolts, *f*, to slide in; *k*, is a staple made fast by screws, or otherwise, to the hinder part of the carriage, for the

purpose of confining the action of the sliding guide *l*. When the mast is fidded, the heel of the bolt stops against the rebate of the carriage, and the thick part of the guide *l*, intervening between the bolt and the staple, the tail is prevented from rising, and, consequently, the bolt cannot be slidden back, the mast is thereby securely fidded.

In order to unfid the mast, the screw *g*, which passes through the back part of the guide, *l*, must be turned, the point of which bearing against the end of the bolt, causes the guide to be drawn back, and the tail of the bolt being thereby allowed to rise, the heel passes over the rebate, and the weight of the mast bearing against the point of the bolt, forces it back, as at B, by which means the mast is liberated.

Having described the improved fids as applied to standing masts, for the purpose of fidding and unfidding the upper masts of ships and other vessels, the patentees observe, that they do not mean to confine themselves to that particular situation only, as a similarly constructed apparatus is also applicable to bowsprits, and various other masts and spars, to which they claim their exclusive adaptation. Neither do they confine themselves to the particular metals or materials mentioned in describing the construction of the said apparatus.

And, lastly, they claim as their invention, the adaptation and employment of sliding bolts or wedges in the manner made, or having the properties of the sliding bolts or wedges, such as have been above described, for the purpose of fidding and unfidding the upper masts, and other masts and spars as aforesaid, of ships and other vessels.

[*Inrolled May*, 1826.]

To JOHN VALLANCE, *of Brighton, in the County of Sussex, Esq. for his Invention of an Improved Method or Methods of abstracting or carrying off the Caloric of fluidity from any Congealing Water, (or it may be other liquors;) also, an Improved Method or Methods of producing intense cold; also, an Improved Method or Methods of applying this Invention, so as to make it available to purposes, with reference to which temperature above or below the freezing point may be rendered productive of advantageous effects, whether Medical, Chemical, or Mechanical.*

[Sealed 28th August, 1824.]

THE principal intention of this invention, (like that for which Mr. Vallance obtained a patent in Jan. 1824, (see our 8th Vol. page 251,) is to produce ice with rapidity; and in the usual elaborate style of that gentleman's literary productions, the present specification commences with a philosophical dissertation upon the principles by which water is congealed into ice, and which principles are embraced under two heads, (viz.) the abstraction of caloric by the contact of colder bodies, and the escape of it by radiation and evaporation. In this latter case, the air acts as an absorbant of moisture, and carries off the heat from water by evaporation, which process is greatly assisted by a strong current of air passing over the surface of the water; hence, a brisk wind greatly promotes freezing.

The present invention is, therefore, to be considered as an improvement upon the mode formerly proposed as above mentioned: and which consists in the construction and employment of an apparatus very imperfectly represented

in Plate XV. at fig. 7, *a, a, a, a*, is a double cylinder, divided near the middle by a partition, *b, b*, in the centre of which is an aperture communicating between the upper and lower cylinders; *d*, is a piston, working in a chamber in the upper cylinder; *f, g*, are tubes passed through the piston, one of which tubes opens in the upper cylinder beneath the chamber, *e*, the other opens above. There is a valve in the tube, *g*, opening into the chamber, *e*, for admitting the air when the piston rises, and a valve in the tube, *f*, for discharging the air from the chamber when the piston descends.

In the centre of the plate, *b*, a short tube extends downwards, at the lower end of which is a conical disc, *h*. Immediately under this disc is a table, *i*, supported by the rod, *j*, and passed through the lower end of the cylinder. As it is necessary that the interior of the cylinders should be exhausted of air previously to performing the operation of freezing, it is requisite that all its joints should be air tight; and for the purpose of more conveniently effecting this, the bottom of the cylinder is made to slide in; and round the edge there is a trough, *k, k*, to be filled with mercury, which when the interior of the cylinder is in a state of vacuum, is, by the pressure of the external air, forced up the spaces between, and the joint is thereby rendered tight.

From the upper part of the upper cylinder a pipe or tube, *l*, extends to the lower part of the vessel, *m*, and from the top of the same vessel another pipe or tube, *x*, extends to the lower cylinder, *a*. This vessel, *m*, is divided at the part, *n*, by an iron plate perforated with small holes, from which small pipes descend, and this plate is covered with sheet lead, also perforated with small holes immediately over the pipes, partly for the

purpose of allowing air to rise from the lower or conical part of the vessel upwards, and also to admit its being drained from moisture.

In the vessel, *m*, there is to be placed a considerable quantity of smooth round stones, such as marbles or small stones picked up on the sea side, and upon the upper part of these stones a small quantity of sulphuric acid is to be dropped, just sufficient to wet their surfaces, and to trickle down from stone to stone. The sulphuric acid is to be supplied from the funnel, *o*, and to pass down through a bent leaden pipe, *p*, shewn by dots. This pipe extends horizontally from the centre across the vessel, *m*, and is perforated with small holes, just sufficient to allow a very small sprinkling of the acid to descend upon the stones; and in order that the acid shall be equally distributed over the stones, the funnel, *o*, is made to revolve and the pipe, *p*, to travel round the upper part of the vessel by means of a bevelled cog wheel, *q*, actuated by another bevel cog wheel upon a rotatory shaft, *r*.

A reservoir of water, *s*, is placed on the other side of the apparatus, from which a pipe, *t*, proceeds into the cylinder, for the purpose of discharging a small jet or fountain of water upon the conical disc, *h*, from whence it runs through small holes on to the table, *i*, where it is to be frozen, which operation may be watched through small lenses or windows, *v*, *v*.

Things being thus arranged, the piston, *d*, is put in action, for the purpose of drawing the air from the pipe, *x*, through the narrow space between the disc, *h*, and table, *i*. The rising of the piston causes the air to pass through a valve in the tube, *g*, into the chamber, *e*, and upon the descent of the piston, again the air is expelled from the

chamber, *e*, through a valve into the tube, *f*, and thence through the upper part of the cylinder, and through the pipe, *l*, to the lower part of the vessel, *m*.

The air thus pumped into the lower part of the vessel, *m*, rises through the small leaden pipes in the plate, *n*, before described, and then passes by the spaces or interstices between the stones to the upper part of the vessel, having in its progress through the vessel come in contact with the sulphuric acid, and by that means been deprived of its moisture, so that the air now occupying the upper part of the vessel will be perfectly dry.

As the piston continues working, the dry air will be drawn from the upper part of the vessel, *m*, through the pipe, *z*, and thence passing with great rapidity between the disc, *h*, and table, *i*, the caloric of the water upon the table will be rapidly taken up by the current of dry air, and a congelation of the water take place.

The water being continually supplied from the reservoir, *s*, by the pipe, *t*, in small quantities, as a shower on the table, *i*, the ice thus formed will rapidly increase, which being observed through the windows, *v*, the stem, *j*, must be turned by its handle, *x*, as the ice accumulates, until a heap of ice is formed equal to the height between the bottom of the cylinder and the disc, *h*; should any of the sulphuric acid descend into the vessel, *m*, to the plate, *n*, it will drain through the small pipes into the conical part, and thence through the pipe, *w*, to the receptacle at bottom, where the end of the pipe being bent round, retains a portion of the fluid, and thereby preserves the vessel air-tight.

There are modifications of the above plan proposed, for cooling other matters beside water, whether above or below the freezing point; but the principle is the same,

and as an idea only is given, and not an intelligible design, for the construction of a machine, we presume that the foregoing will be considered sufficient to illustrate the intentions of the patentee.

[*Inrolled February*, 1825.]

To John Reedhead, *of Heworth, in the County of Durham, Gentleman, for his Invention of certain Improvements in Machinery, for propelling Vessels of all Descriptions, both in Marine and Inland Navigation, which he conceives will be of public utility.*

[Sealed 26th July, 1825.]

This invention is a reciprocating oar or paddle, to be applied to the side of a ship, boat, or other vessel, instead of the ordinary paddle wheel. It is to be actuated by the power of a steam engine, or other first mover, and is so contrived, that in retrograding, which is the propelling part of its action, the broad surface or blade of the oar shall be presented almost in a perpendicular position to the resistance of the water; and in advancing, the oar is thrown up into nearly a horizontal position, so as to pass through the water with little or no resistance.

Plate XVI. fig. 1, shews the manner in which this oar and its appendages are constructed, and also the way in which it moves to and fro through the water; *a, a*, is the inside of the paddle case; *b* is a pinion working in a rack, *c*, which rack slides backward and forward, in a groove in the lower part of the frame; *d* is a beam connected to what is called the dipping frame, an oblong

frame, rising and falling upon an axis at *e*, the pivot of which axis rests in the side of the rack. At the hinder part of the beam, *d*, there is a piece, *f*, forming an inclined plane, which is intended to act against a friction roller, *g*, by which contrivance, whenever the inclined plane passes under the friction roller, the forward end of the beam is thrown up; and when the inclined plane is behind the friction roller, the beam falls into the horizontal position, shewn by dots.

The paddle or oar represented at *h*, is attached to an arm, *i*, which turns upon a joint at the end of the beam, *d*, and is prevented from proceeding beyond a right angle, by a shoulder in the joint. At the upper end of the arm of the paddle, there is a friction roller, *k*, which runs against the under side of a plate, *l*, when the paddle advances, but rises as soon as it arrives at the slot or opening, *m*.

The pinion, *b*, which gives motion to the paddle, is made to reciprocate by means of a lever, *n*, and a rod, *o*, connected to the beam of the steam engine or other vibrating power.

On that end of the engine beam being depressed to which the rod, *o*, is attached, the pinion, *b*, will turn about a quarter of a revolution, and by that means will drive back the sliding rack in its groove, carrying with it the beam and the paddle, by which action a propelling stroke is effected, the paddle descending in the water as it passes along, but retaining for some time nearly its erect position, until thrown into the situation represented by dots, by the friction roller, *k*, running against the under side of the plate, *l*.

When the end of the engine beam rises again, the pinion is driven round to its former position, and consequently the rack, the beam, and the paddle are carried

forward, but in passing through the water the paddle presents only its edge, and therefore meets with little or no resistance. On the friction roller, *k*, passing up through the slot or opening, *m*, the paddle again assumes its erect position, and is ready to give another propelling stroke.

The specification concludes by saying, "such an apparatus as hereinbefore described being an horizontal reciprocating motion applied to the paddle of a steam boat or other propelling engine, as also the manner of hanging the paddles, and mode of depressing and elevating the same, by means of the inclined plane and friction wheel described," being entirely new, &c. is hereby claimed.

[*Inrolled September*, 1825.]

To John Hillary Suwerkrop, *of Vine Street, Minories, in the City of London, Merchant, in consequence of a communication made to him by a certain Foreigner residing abroad, for an Apparatus or Machine which he denominates a Thermophore or portable mineral or river water Bath and Linen Warmer, and also for other apparatus or machinery connected therewith for filtering and heating water.*

Sealed, 4th December, 1824.

That part of the invention called the thermophore, appears to be merely a van or other wheeled carriage upon springs, designed to carry vessels which are to be employed as baths, and also having tanks in its lower parts for the reception and conveyance of hot and cold

water, with which these baths are to be filled when about to be used. There are also places about the carriage for the convenient stowage of buckets or other vessels, and also small vessels to be heated internally by immersion in hot water, for the purpose of airing or warming linen. The other features proposed, as forming parts of the invention, are a filtering tub for clarifying water, and also a small furnace and worm pipe, enclosed in a tub or other vessel, for the purpose of readily heating water.

The body of the van or carriage is occupied about half way up with boxes or chambers, one of which contains a vessel, holding hot water, another holding cold water, both of which may be drawn out by cocks in the hinder part. The buckets for filling the baths and the vessels for warming the linen are stowed in the remaining chambers, above which are placed three empty baths, and a seat is provided in front of the carriage for the driver. This constitutes the new invented apparatus, machine or vehicle, called the thermophore.

The linen warmer is a cylindrical vessel, about the size of a pail, in which another vessel is inserted; and the space between the two vessels, occupied with hot water for the purpose of heating the inside of the interior vessel, where linen is to be placed to be aired or warmed.

The filter is a tub with a partition in the middle, dividing it into two vessels, in each of which there is a false bottom, perforated with holes, as a strainer. Above the strainer a considerable quantity of sand is placed, and upon this the water, which is to be filtered, is poured, which insinuates itself through the sand, and through the perforations of the false bottom, and also through a closely laid mat of horsehair, fastened under the false bottom, and ultimately settles at the bottom of the vessel in a clarified state. A bent pipe communicates from the

upper to the lower vessel, and if it is necessary that the water should be filtered a second time, it may go through the same process in a similar apparatus below; this constitutes the new invented filter.

The water is to be heated in a vat, wherein a small inclosed fire stove, with a spherical head, is placed, and the fire is supplied with air through small tubes from without. The flues of this stove are worms, extending and winding upwards through the water, and discharging the smoke at top. By this stove, and the progress of the smoke through the worms, the water in the vat is to be heated.

This apparatus is to be carried about for the purpose of supplying invalids with baths at their own houses, instead of their being obliged to resort to public baths: in which apparatus the patentee states that it is not his intention to claim such parts as have been known or in use before, "excepting only in their application to the purposes of forming the thermophore, or a portable mineral and rain water bath and linen warmer, and in heating and filtering water for the same."

[*Inrolled February*, 1825.]

To JONATHAN DOWNTON, *of Blackwall, in the County of Middlesex, Shipwright, for his Invention of certain Improvements on Water Closets.*

[Sealed 18th June, 1825.]

THE design of this invention is to draw the soil and water from the basin of the water closet by means of an

air pump, and to force it into the discharge pipe by the returning stroke of the piston.

Plate XV. fig. 8, represents the apparatus, the wood frame being partly removed, for the purpose of shewing the parts more distinctly; *a*, is the basin; *b*, is a pipe intended to bring water from a reservoir to cleanse the basin; *c*, is the cylinder of the air pump; *d*, the rod of the piston of the air pump; *e*, a bent tube leading from the under side of the basin to the bottom of the air pump.

When the piston is raised, a partial vacuum takes place in the lower part of the cylinder, and in the bent tube, *e*, which causes the valves to open, and the soil and water to be drawn into the lower part of the cylinder; on the piston descending again those valves close, preventing the soil from returning, and another valve opens to the discharge pipe, *f*, allowing the soil to be driven through into the discharge pipe, whence it is carried off in any convenient direction, according to the inclination given to that pipe.

A small pipe, (not seen in the fig.,) leads from the upper part of the basin into the cylinder, having a valve opening inwards, which allows the foul air to pass from the basin into the upper part of the cylinder when the piston descends; and on the rising of the piston again that foul air is driven through the pipe, *g*, into the discharge pipe, *f*, and all smell is thereby got rid of.

A lever is to be attached to the piston rod, for the purpose of raising it, and to this lever some small cranks are to be connected, for the purpose of opening the cock of the clean water pipe at the same time that the piston rises. There is a small plug, *h*, in the discharge pipe, which may be occasionally drawn out in order to cleanse that pipe if it should become foul.

[*Inrolled October*, 1825.]

To THOMAS RICHARD GUPPY, *of Bristol, Gentleman, for his invention of certain Improvements in masting Vessels.*

[Sealed 4th November, 1824.]

THESE improvements consist in adapting cross poles, extending from the sides of a ship, to support the upper masts, instead of the ordinary lower or standing masts. The patentee does not appear to have perfectly made up his mind as to the details of their construction, observing in several instances that a well informed and judicious nautical man will readily suggest the best mode of carrying the plans into effect:

Plate XVI. fig. 2, shews a cross section of a vessel, with crutch masts, *a*, *a*, of the kind proposed adapted to it. They are secured at bottom to the sides of the vessel by iron fastenings, which have joints at *b*, *b*, for the purpose of allowing the masts, when required, to be inclined out of the perpendicular towards the fore or after part of the vessel. These poles are to meet at or near the part where the cross-trees are attached, and may be united in various ways; one mode of junction proposed by the patentee is shewn at fig. 3. The poles may, however, extend upwards, as in fig. 4, and be braced together, as at *d*, leaving a suitable resting-place for the foot of the upper mast, and having the other appendages convenient for retaining the upper parts of the rigging.

The invention, however, is the employment of crutches or poles, extending from the sides of the vessel, to support the upper masts, without a standing mast, and the patentee does not confine himself to any particular me-

thod of fastening the said masts together, provided that the fastenings are made secure, and suitable for the purpose of conveniently rigging the vessel.

[*Inrolled May*, 1825.]

To William Mason, *of Castle Street East, Oxford Street, in the Parish of St. Mary-le-Bone, in the County of Middlesex, Axletree Manufacturer, for his invention of certain Improvements on Axletrees.*

[Sealed 18th June, 1825.]

This invention is a mode of securing the cap of the axletree of a carriage, in order to prevent the wheel coming off by accident. Beyond the cap the end of the axletree has a thread, for the purpose of screwing on a nut, much in the usual way; but this nut has several semi-circular grooves cut across the thread of its hollow screw, and a similar groove is also cut across the thread of the end of the axletree, both in the direction of the axis of the screws, by which contrivance, when the nut is screwed on to the end of the axletree, a cylindrical hole is formed wherever the two semi-circular grooves come together; and in this hole a pin or bolt, which is attached to a collar, is to be introduced, in order to lock the nut and screw together; after which an end pin screws into a hollow thread at the end of the axletree, and renders the whole secure.

Plate XVI. fig. 5, represents the end of the axletree and the improved parts belonging to it detached; *a*, is the end of the axle-tree; *b*, the collar; *c*, the thread to re-

ceive the nut, *d.* It will be seen that a semi-circular groove is cut along the screw, *c*, and that five similar grooves are cut in the inside of the nut, *d*; from these it will be perceived that if the nut is screwed on to the end of the axletree, whether halfway or home to the collar, that whenever one of the grooves in the nut passes the groove in the screw, *c*, a cylindrical hole will be formed half in the axletree and half in the nut. The collar, *e*, is now to be put on, and its pin, *f*, passed up the said cylindrical hole, which effectually locks the nut and the axletree together, and prevents the possibility of the nut shaking off by any agitation. However, to prevent the collar from dropping off, and to make the whole secure, a pin, *g*, is screwed into the recess at the end of the axletree, which confines all the parts.

The patentee has, in addition to the foregoing, exhibited in his specification a section of the box of a wheel. This however appears as perfectly gratuitous, as the title of the patent mentions only axletrees, and therefore the construction of the box of the wheel or any other part of the carriage, can have nothing to do with the present patent. Fig. 6, is described as a cast metal box, cut with certain cavities in it, for the purpose of more effectually distributing oil over the surface of the axletree in order to reduce friction.

[*Inrolled, October,* 1825.]

To THOMAS HANCOCK, *of Goswell Mews, in the Parish of St. Luke, Old Street, in the County of Middlesex, Patent Cork Manufacturer, for his Invention of a new*

or improved Manufacture, which may in many instances be used as a substitute for Leather and otherwise.

[Sealed 15th March, 1825.]

THIS invention appears to be an improvement upon a former patent granted in November, 1824, to the same person, under a title of similar import to that above recited (see our Tenth Vol. page 22). In the former instance, the patentee employed loose filaments of wool, cotton, flax, or other fibrous materials, felted or matted together as a basis upon which he deposited elastic gum (caoutchouc), and this, when dried, formed a substance nearly resembling leather, and capable of being used in many cases as a substitute for leather.

In the present instance the patentee employs a *woven* cloth, made from wool, cotton, flax, or other fibrous materials, as the basis of his artificial leather, which cloth is to be properly stretched out upon a flat surface, and then covered with the composition hereafter to be described, consisting principally of the elastic gum (caoutchouc), before mentioned, which is to be spread even upon the cloth by a spatula or other such implement; upon this a quantity of wadding, made of cotton, flax, wool, silk, hair, or other such materials, carded, combed, or hackled, is to be laid in a uniform layer, and the whole being placed between boards or plates is then to be submitted to pressure, by passing it through a pair of rollers, or other convenient pressing apparatus, for the purpose of squeezing the liquid composition through the fibrous materials, and thereby saturating the whole.

When this has been done, the sheet of artificial leather

is to be exposed to the open air for the purpose of drying it, or to be placed in a suitable drying room, where the heat does not exceed a temperature of 80 or 90 Fahr.

The composition to be employed for saturating these materials is to be mixed in the following manner and proportions. Two pounds of caoutchouc (Indian rubber), is to be dissolved in one gallon of oil of turpentine and highly rectified coal tar, to this is to be added six ounces of black resin, two pounds of strong glue size, and one pound of ochre, powdered pumice, or whitening.

Another proportion mentioned is one and a half pounds of caoutchouc, dissolved as before; one pound of glue size and resin, melted and mixed in a steam bath, to which the former ingredients are to be added, and well stirred when mixing, the heat facilitating the dissolution of the ingredients; the whole is then to be strained through a sieve, that none of the undissolved parts may be used.

When a cheap and stiff substance is required to be made, the first of these compositions, containing the ochre or whitening, is to be used, and the proportions may be one-third part whitening and glue; but when pliancy and strength are the desired objects, the second composition is to be preferred, in which the caoutchouc forms the principal ingredient.

A material resembling leather, of any required substance, may be made in this way, by placing one thickness upon another, before the gum has become dry, and pressing them together; and if it should be preferred, the woven cloth may be drawn off before the whole has become fixed, leaving a substance composed of the wadding and the gum only.

In making a substance to be employed as the soles

leathers of boots and shoes, the foundation is proposed to be a composition of wool and cotton, in equal quantities; for pipes, straps, and parts of accoutrements, chopped hemp and cotton, or flax, is to be used; and when the surfaces are required to be particularly smooth, the material, when made, is to be pressed between plates of polished metal.

A substitute for leather, thus prepared, is suitable for making soles of shoes and boots, buckets, pipes, or hose, for the conveyance of water, roofs of verandas, and other awnings, corn and flour sacks, packing cloths, tarpaulings, and a great variety of other articles, to which leather is applicable.

[*Inrolled, September,* 1825.]

To THOMAS HANCOCK, *of Goswell Mews, in the Parish of St. Luke, Old Street, in the County of Middlesex, patent Cork Manufacturer, for his invention of an Improvement or Improvements in the Preparation or in the Process of making or manufacturing of Ropes or Cordage, or other Articles, from Hemp, Flax, and other fibrous Substances.*

[Sealed 15th March, 1825.]

THIS invention consists in covering ropes with elastic gum (caoutchouc) in a liquid state, for the purpose of protecting the vegetable materials that compose them from the destructive effects of damp, by which they are so rapidly brought into a state of decay.

The hempen material, whether in the state of threads,

strand ropes, or cordage, are to be soaked in the juice which oozes from a certain tree, common to South America and some parts of the East Indies, called *Hevœa*, and which the patentee considers to be very like, if not the same substance, as is commonly called Indian rubber. This juice, when it first flows, is about the consistency and has much the appearance of cream. It is to be used exactly in the same way as tar is commonly used, except that it is not to be heated.

Several coats of this juice may be laid over the external surface of the cords, one succeeding the other before the preceding coat has become perfectly dry. After this the ropes are to be placed in a drying room, moderately heated, until the gummy material, on the outside of the ropes, has become perfectly free from stickiness.

The ropes for ships' cables or tackling, when thus prepared, are equally pliable to those coated with tar; and as the material cannot crack by drying, so as to expose the internal fibres to the action of the air or damp; ropes so prepared, will last much longer than by the ordinary treatment, being less liable either to external or internal injury.

[*Inrolled September*, 1825.]

To Samuel Parker, *of Argyle Street, St. James's, in the County of Middlesex, Bronze and Iron founder, and* William Francis Hamilton, *of Nelson Street, Long Lane, in the County of Surrey, Engineer, for their invention of a certain Alloy or Alloys of Metal.*

[Sealed 12th November, 1825.]

In our present vol. page 32, we noticed the invention

or discovery of a new alloy of metal, which exactly resembles fine gold, and is denominated Ormolu, or Mosaic gold, for which the inventor obtained a patent as above. We had considered this metal to be only a superior quality of brass, presenting a fine gold colour, and it now turns out that our notions were right.

The patentees state in their specification that great care and experience is necessary to the perfecting of this alloy, as the same materials will not, under different circumstances, produce similar results. They make use of equal quantities of copper and zinc, melted at the lowest temperature that copper will fuse, and having stirred them together, so as to produce a perfect admixture of the metals, they then add a further quantity of zinc in small portions, until the alloy in the melting pot becomes of the colour required.

If the temperature of the copper is too great, a portion of the zinc will fly off in vapour, and the result will be, that alloy commonly called spelter or hard solder; but if the operation is carried on at as low a temperature as possible, the alloy will first assume a yellow colour, as brass, and then by the addition of small portions of the zinc, the colour will change to a purple or violet hue, and ultimately become perfectly white, which is the appearance that the proper alloy should assume when in a fused state. This alloy may be cast into ingots, or in any forms required, and when cold will have the appearance of an alloy of fine gold and copper. But it is difficult to preserve its character when re-melted, as the zinc is very apt to waste by flying off in evaporation, by raising the temperature above that point at which copper begins to fuse.

The patentees are aware that a variety of alloys of copper and zinc have been made, and that they cannot

maintain the exclusive right of mixing alloys of those metals abstractedly; but having after great labour and observation discovered the precise proportions of the two metals, and the modes of treatment which will produce an alloy resembling fine gold, they claim the exclusive right of mixing an alloy of copper and zinc, consisting of from fifty-two to fifty-five parts zinc out of a hundred.

Inrolled May, 1826.

Novel Inventions.

On the Rectification of Spirituous Liquors without Heat, By M. E. Pajot Decharme.

HITHERTO alcohol, in liquors or spirits, could not be rectified, or raised from an inferior to a higher degree, and consequently be brought to a superior state of purity and strength, except by distillation; an operation which could only be effected by an alembic, and some heat.

The mode of rectification here treated of, can be performed in the cold, and consequently, without the aid of an alembic, or of combustibles. The following, in general, is the method of proceeding:—

On the one part, there is poured into a vessel with a flat bottom, a given quantity of the spirits, which is desired to be rectified, whether it be small spirits *(petites eaux,)* proof spirits of Holland, or spirits of a higher degree.

On the other part, one of the most deliquescent salts is to be dried, either muriate of lime, or muriate of manganese; the first is preferable in point of economy, and the superiority of the second gives it a claim to be chosen, but it is less common, and not so easily obtained.

In another vessel of a large surface, and placed on three or more feet in the vessel which contains the spirits, is to be put the muriate of lime, dried and pounded.

This disposition being made, the vessel which holds the spirits is to be closed up completely, or its edges are to be secured with bands of paper pasted over them, and the whole is to be left in this state for four or five days. After this time, the vessel holding the spirits is opened, and that containing the muriate is taken out. This salt is then found to be more or less dissolved, according to the quantity of water which it has attracted. The degree of strength of the spirits is then examined, and it is found to be increased 5, 6, or 8 degrees, according to the fineness of the grain of the dry muriate: it ought not, however, to be too fine, to prevent its becoming pasty, and to make its surface more extensive. The vessel holding the muriate is then cleaned, a new portion of the dry muriate is spread on it, and it is put back into its place, and then the vessel containing the spirits is again shut up, in the same manner as before the insertion of this second dose of deliquescent salt.

By operating successively in this manner, highly rectified alcohol is obtained, and weak spirits, of 10 or 15 degrees (of Beaumé's areometer) are raised to 40 or 42 degrees.

It may be conceived that this method may be applied to the concentration of various saline fluids, acids, &c. and that by a particular disposition of the factory, basins,

&c. it would be easy to establish a rotation (of the processes), which, in a given time, would afford, at pleasure, daily products of all degrees of concentration.

M. Decharme is, at present, employed in trying to give to this process, by the aid of mechanism and natural philosophy, all the regularity, precision, and perfection, desirable for a work on a large scale.—*Annales de Chemie.*

Impressing Steel Plates.

M. Hollunder has given the following method of making impressions in steel plates, in his Metallurgico-technological Journal.

A mould (he says) is made of the object to be imprinted, and a mixture of one pound of brass, and five ounces of pewter, in a state of fusion, is poured into it. The piece of steel on which the impression is to be made, is then rubbed with turpentine; it is afterwards covered with blotting-paper, and the whole is enveloped with earth, in order to preserve the polished surface of the steel from the action of the air, and by this means prevent oxydation. The piece of steel is then made red hot; as soon as it arrives at this state, it is taken out of the fire, the earth is taken off, and the composition cast above mentioned, is imprinted in it by means of strong pressure (applied as occasion may require.) Impressions in brass, or any of the metals, can be executed in the same manner, and the impression of any subject can with much ease be obtained.

Polytechnic and Scientific Intelligence.

ROYAL SOCIETY.

(*Continued from page* 159.)

Dec. 8.—A paper was read before the Society, entitled "Additional Proofs of the Source of Animal Heat being in the Nerves." By Sir E. Home, Bart. V. P.

Dec. 15.—The president announced to the Society his Majesty's munificent foundation of two annual prizes, consisting each of a medal, valued at fifty guineas, to be bestowed as honorary rewards to the authors of such new discoveries as the Society might deem worthy. Dr. J. R. Johnson was admitted a Fellow. The Croonian Lecture was read by Sir E. Home; Subject, "The Structure of Muscular Fibre."

Dec. 22.—Gideon Mantel, Esq. was admitted a Fellow. A paper was read on the poison of the common toad, by J. Davy, M.D. and F.R.S. The popular belief in the venomous nature of the toad, though of great antiquity, has now been rejected, as a vulgar prejudice, by most of the modern naturalists, particularly by Cuvier; but like many other long received opinions, it is really founded in fact, and the denial of it by modern philosophers arises from superficial examination. Dr. D. found the venomous matter to be contained in follicles, chiefly in the cutis vera, and about the head and shoulders, but also

distributed generally over the body, and even to the extremities. On the application of pressure, it exudes, or even spirts out to a considerable distance, and may be collected in sufficient quantities for examination. It is extremely acrid when applied to the tongue, resembling the extract of aconite in this respect, and it even acts upon the hands. It is soluble, with a small residuum in water and in alcohol, and the solutions are not affected by those of acetate of lead and corrosive sublimate. On solution in ammonia, it continues acrid; it dissolves in nitric acid, to which it imparts a purple colour. By combination with potash or soda it is rendered less acrid, apparently by partial decomposition. As left by evaporation of its aqueous or alcoholic solutions, it is highly inflammable; and the residuary matter that appears to give it consistency, seems to be albumen. Though more acrid than the poison of the most venomous serpents, it produces no ill effects on being introduced into the circulation. A chicken inoculated with it was not affected.

The author conjectures that this "sweltered venom," as it is correctly termed by our great dramatist, being distributed over the integuments, serves to defend the toad from the attacks of carnivorous animals; and the animal is still further protected by the horny nature of its skin, which contains much phosphate of lime.

As the venom consists in part of an inflammable substance, it is probably excrementitious, and an auxiliary to the action of the lungs in decarbonizing the blood. This view of its use is confirmed by the fact that one of the two branches of the pulmonary artery supplies the skin, its ramifications being most numerous where the follicles of venom are thickest.

Dr. D. has found the skin of the toad to contain pores

of two kinds; the larger chiefly confined to particular situations, and which, when the skin is held up to the light, appear as iridescent circles, and the smaller more numerously and generally distributed, which appear as luminous points of a yellow colour. Externally these pores are covered with cutsil, and some of the larger ones even with rete mucosum: internally they are lined with delicate cellular tissue. By inflating the skin, Dr. D. ascertained that it was not furnished with spiracula, the existence of which he had been led to suspect by some particular circumstances in the physiology of the animal.

A paper by the same author was also read, on the heart of the animal belonging to the genus rana. Dr. Davy has discovered that the heart of the common toad and bull frog, and the common frog, instead of consisting of one auricle and one ventricle, as generally stated, has two auricles, divided by a septrum of fibrous substance; and he has reason to believe that their structure prevails throughout the order of *Batraciens*. This discovery removes the anomaly among reptiles supposed to be presented by these animals, as forming a portion of the link between mammifera and fishes, and preserves unbroken the chain of connection between reptiles and fishes arising from the analogy of their respective organs of respiration.

Jan. 12.—Dr. T. S. Tiarks and Sir C. Wetherell, Knt., Solicitor General, were admitted as Fellows.

A paper was read, entitled "Observations on the Heat of July, 1825, together with some remarks on sensible cold," by W. Heberden, M.D. F.RS.

These observations were made on Dr. Heberden's lawn at Datchet, near Windsor, by means of thermometers suspended under the shade of trees: the highest temperature observed was 97 Fahr. Dr. H. remarked, that the

extraordinary weather of that month passed away without rain, lightning, change of wind, or any obvious cause, and mentions a nearly parallel instance in 1808, as recorded in the Society's observations, and also by Mr. Cavendish. He gave some experiments and remarks on a method of ascertaining sensible heat, which he believes to be much above that indicated by the thermometer, and proposes to raise the thermometer to a high temperature in the first instance, and to watch the successive decrements in equal times on exposing it to the open air.

In his concluding remarks on sensible heat, Dr. H. states that it is his opinion that the chief cause of the loss of heat is by the body being affected by the action of the wind, not by the moisture of the surrounding atmosphere.

A communication was also read, entitled "An Account of a Series of Observations to determine the Difference of Longitude between the National Observatories of Greenwich and Paris," by J. F. W. Herschel, Esq. Sec. R.S. communicated to the Board of Longitude. In this paper, after stating the wish expressed by the French Minister of War that the above determination should be made, and the readiness on our part to comply, the methods resorted to by Mr. H. were described, and the observations given in detail. They were made by himself and a French officer on this side of the Channel, and by Capt. Sabine and another French officer on the coast of France. Their general results were $9'. 21''. \frac{6}{10}$ as the difference of longitude between the two Observatories, and though many of the observations were rendered unavailable by untoward circumstances, yet this determination is not likely to require a correction exceeding one-tenth of a second.

Jan 19.—The Right Hon. George Canning was admitted a Member: S. H. Christie, Esq. was admitted a Fellow.

A paper was then read on the Cambridge Transit Instrument, being a supplement to a former paper, by Professor Woodhouse, F. R. S. Also a paper on the magnetic influence of the solar rays, by S. H. Christie, Esq. A. M. F. R. S.

Jan. 26.—N. B. Edmonton, Esq. was admitted a Fellow, and a paper was read on the barometer, by J. F. Daniell, Esq. F. R. S. The author, referring to some former papers which he had presented to the Society, supplies the deficiency which he therein regretted, of evidence of the gradual deterioration of barometers, from registers, which had been continued for a sufficient length of time with the same instruments to establish the fact. From the Transactions of the Meteorological Society of the Palatinate, he has now extracted the mean annual height of the mercurial column, at eight different stations in Europe, for twelve successive years, and has shewn that the average of the last six years is lower than the preceding. He has also made the observations which might have been anticipated from theory, that the amount of depression, depends in some measure upon the elasticity of the medium in which the instrument is placed. The five series of observations, where the mean pressure is 29·235 inches, exhibit an average depression of .059 inches in twelve years; while the three series, whose mean pressure is 25·977 inches, present a depression of only ·026 in the same interval. From the same Transactions, an extract is made of the observation of Hemmer, corroborating the opinion, that air gains access to the vacuum, by means of the glass, and not of the mercury.

Mr. D. states that the results of the experiments made by the platinum guard, are satisfactory, as far as there has been time for their development. Mr. D. brought forward some highly curious observations of Dr. Priestly, which not only confirm his opinion, but establish the accuracy of Mr. Faraday's observations upon the escape of gas from glass vessels, attempted to be confined by mercury, but which were secured by water. Dr. Priestly found that mercury did not come in contact with the glass, therefore the air was permitted to pass down between the mercury and the glass, and then to rise into the vessel, while the contact of water and glass being more close, the same did not take place; and that a little water placed upon the mercury, and in contact with the glass, prevented the passage of the air.

From the whole of the experiments, Mr. D. concludes, that the air gradually insinuates itself into the best made barometer of the ordinary construction; that this does not take place from any solution of the air by mercury; that the passage of the air is between the mercury and the glass; and that the gradual deterioration of barometers may be prevented by a ring of platinum cemented to the open end of the tube.

(To be continued.)

SOCIETY OF ARTS.

THE operations of this society have been unusually active during their present session, the numerous subjects laid before their several committees, if not of the first importance with regard to science, have at least demonstrated that the spirit of invention is alive in every part of the kingdom, both as to the discovery of new combinations

connected with the mechanical, chemical, and manufacturing arts, and a cultivation of such resources as our own country affords, of supplying various articles which we have heretofore imported from foreign climes.

It is, however, to be regretted that in many instances great ingenuity has been uselessly expended upon subjects of little worth, or such as are built upon hypotheses that are incompatible with the established principles of science. The errors into which many of these projectors have fallen are in no small degree attributable to that inundation of speculative trash, published by the cheap periodicals of the day, under the prostituted name of science, and disseminated among the uninformed in place of works of established merit.

It has been our practice to give a slight sketch of all the subjects upon which the several committees of the Society have deliberated, for the purpose of exhibiting to public view the many crude schemes that are occasionally brought before them, that others may learn and avoid the like errors; but the very great pressure of matters which seemed to claim our first consideration, have prevented us from noticing the proceedings of this Society during the present session, and we have now only room to give the names of those candidates whose communications have received the honorary or pecuniary rewards of the Society, at the hands of their president: reserving the reports of the different committees, which should have accompanied this, to our next number.

Mechanics.

To Mr. T. Collett, Upper Greystoke-place, Fetter-lane, for a pair of shears for making tags for laces, the Silver Vulcan Medal.

To Mr. George Hooper, 1, Bury-street, Chelsea, for a builder's level, Five Guineas.

To Mr. C. Hartley, 4, Essex-street, Battle-bridge, for a hand rail sector, the large Silver Medal.

To Mr. W. Spencer, Ordnance-place, Chatham, for his improved method of letting go an anchor, the Gold Vulcan Medal.

To Mr. E. Cary, Bristol, for his improved dead eyes for shipping, the Silver Vulcan Medal.

To Mrs. Henry Goode, Ryde, Isle of Wight, for a blind for circular headed windows, the Silver Vulcan Medal.

To Mr. James Skinner, 81, New Park-street, Southwark Bridge, for an improved stage coach, Thirty Guineas.

To the same, for a trap for vermin, Five Guineas.

To Mr. Joshua Jenour, jun. 31, William-street, Hampstead-road, for a shot cartridge, Fifteen Guineas.

To Mr. J. Adcock, 24, Leman-street, Goodman's-fields, for an adjustable door lever, the Silver Vulcan Medal.

To Mr. J. T. Towson, Devonport, for a banking for a chronometer, the silver Vulcan Medal and Ten Guineas.

To Mr. W. Palmer, Clifton-street, Finsbury, for an improved ruling machine for engravers, the large Silver Medal.

To Mr. D. Magson, 26, Harp-alley, Fleet-street, for a valve and stand pipe for water mains, Five Guineas.

To Mr. G. Edwards, Lynn, Norfolk, for a levelling and surveying instrument, the Gold Vulcan Medal.

To Mr. C. Fay, 35, Picadilly, for his forceps, for dentists, the large Silver Medal.

To Mr. J. D. Holmes, Old Fish-street, for his craniotomy-forceps, the Gold Vulcan Medal.

To Mr. J. P. Clark, 5, King-street, Holborn, for his improved cupping apparatus, the Silver Vulcan Medal.

To Joseph Goodwin, Esq. Clerk of the Stables, Carlton Palace, for his table for veterinary operations, the Gold Vulcan Medal.

To Mr. S. Williams, 2, Stone-stairs, Ratcliff, for his drag for drowned bodies, the Silver Vulcan Medal, and Five Guineas.

To R. Cowen, Esq. Carlisle, for his apparatus to carry off the dust produced in dry grinding, the large Gold Medal.

To. Mr. J. Alderson, 4, Bridge-row, Pimlico, for an instrument for describing arcs of circles the centres of which are not given, Ten Guineas.

To Mr. M. A. Alderson, Manchester, for a set of working drawings of a steam engine, Thirty Guineas.

To Mr. P. Henry, Limehouse, for a set of working drawings of a boat steam engine, Twenty Guineas.

The thanks of the Society have been presented to the following Gentlemen, and their respective communications have been directed to be inserted in the next volume of the Society's Transactions.

To Bryan Donkin, Esq. Chairman of the Committee of Mechanics, for a German boring bit, and a French drawing pen.

To G. Mainwaring, Esq. Marsh-place, Lambeth, for a working drawing of an hydraulic pressure engine erected by him at Whitby.

Chemistry.

To Mr. J. H. Abraham, Sheffield, for his mode of neutralizing magnetism in the balances of watches, the large Silver Medal.

To Mr. J. Roberts, St. Helen's, Lancashire, for his improved safe lamp for miners, the Silver Vulcan Medal and Ten Guineas.

To Mr. J. Cathery, 6, Hyde-street, Bloomsbury, for a mode of coloured etching on ivory, Five Guineas.

To Mr. W. Cooke, jun. 5, Seymour-street North, Clarendon-square, for improvements in etching on steel, the Gold Isis Medal.

To Mr. W. Humphrys, 65, Charlotte-street, Rathbone-place, forh is menstruum for etehing on steel plate, the Gold Isis Medal.

Colonies and Trade.

To M. Barbe, of the Mauritius, for importing 76 tons of cocoa-nut oil, the Gold Ceres Medal.

The Thanks of the Society were voted

To Mr. Huxham, of Travancore, for his method of preventing leakage in casks of cocoa-nut oil, and the same was ordered for publication.

Polite Arts.

In this class sixty-seven candidates (mostly juvenile), have received medals and palettes in gold and silver, for their productions in the different branches of painting, modelling, drawing, and engraving.

Architecture.

To Mr. Richard Richley, 5, King-street, Holborn, for an original design for a national gallery, the Gold Medallion.

To Mr. Benjamin Bond, 16, Upper Montague-street, Montague-square, for an original design for a national gallery, the large Silver Medal.

To Mr. J. H. West, 10, Villiers-street, Strand, for models of the arch of Constantine at Rome, and the west front of Peterborough Cathedral, the Gold Medal.

Surgical Students.

To Mr. J. R. Alcock, 11, New Burlington-street, for a coloured model in wax of a dissected arm, the large Gold Medal.

To Mr. H. Attenburrow, 11, New Burlington-street, for an original coloured drawing of a dissected arm, the large Silver Medal.

To Mr. Joseph Towne, Royston, Cambridgeshire, for a model of a skeleton, the large Silver Medal.

Agriculture.

To Mr. W. Stickney, Ridgemont, near Hull, for his improved varieties of rye-grass, the large Silver Medal.

To Mr. J. Milton, 10, Great Marylebone-street, for an improved bee-hive, the Silver Ceres Medal.

Manufactures.

To Miss Pether, for silk raised in England, the large Silver Medal.

To Mr. Joseph Long, House of Industry, Barham, near Ipswich, for a hat of British Leghorn, Ten Guineas.

To Messrs. J. and A. Muir, Greenock, for a hat of British Leghorn, the large Silver Medal.

To G. Mainwaring, Bennenden, near Cranbrook, for a hat of British Leghorn, Ten Pounds.

To Frances Cobbing, Bury St. Edmunds, for a hat of British Leghorn, Eight Guineas.

To Mrs. Ingledon, Aldborough, Yorkshire, for a hat of British Leghorn, Five Guineas.

To Mrs. Lourey, Exeter, for a hat of doubled split wheat straw, Five Guineas.

To Mr. J. Horne, jun. Kenninghall, near Bury St. Edmunds, for Leghorn plat made of English spring wheat, Ten Guineas.

LONDON ASTRONOMICAL SOCIETY.

April 14.—At this meeting there was read "A comparison of observations made on double stars." Communicated in a letter to J. F. W. Herschel, Esq. Foreign Secretary to this Society, by Professor Struve, of Dorpat. Addressing himself to Mr. Herschel, M. Struve, says, "You may easily imagine with what interest I have perused the work on double stars, by yourself and Mr. South, and with what pleasure I found that, independently of one another, we have arrived at the same results and deductions. Although my instruments were formerly inferior to your's, with respect to measurements (as I could only observe differences of A R on the meridian, and angles of position with a 5-feet telescope of Troughton), they may be considered in an optical point of view equal to your's; viz. the 5-feet telescope of Troughton's to your's attached to the 5-feet equatorial; and the 8-feet one of Dollond to your's attached to the 7-feet equatorial; and after receiving the repeating micrometer of Fraunhofer, which I fixed to Troughton's telescope, every desideratum in this instrument was fulfilled."

M. Struve, however, found himself involved in some practical difficulties, until the arrival of Fraunhofer's large refractors, an instrument which, with respect to double stars, left him nothing further to wish; and he determined on a new examination of all the double stars

observed before (whether by Sir W. Herschel, Messrs. Herschel and South, or himself), as well as on a minute inquiry of the heavens from the north pole to—15° of declination, with respect to these objects. He has now accomplished one-third of the labour, and has found 1000 double stars of the first 4 classes; among which 800 are new, and of these nearly 300 are of the first class. He extends the examination to all stars of the 8th and (8-9) magnitude.

The author after detailing a few more preliminary remarks, enters into a comparison of many of his observations with those of Sir W. Herschel and of Messrs. Herschel and South, pointing out many cases in which their coincidence is truly remarkable;—others in which there are discrepancies, evidently attributable to the relative or real motions of the stars in the intervals between the observations;—others in which the diversities seem occasioned by the instruments employed;—and others in which there are anomalies which do not, as yet, admit of explanation. This part of M. Struve's communication is not susceptible of abridgement.

New Patents Sealed, 1826.

To William Wood of Summer Hill Grove, in the county of Northumberland, Gent. for his invention of an apparatus for destroying the inflammable air, (which is commonly known by the name of fire damps in mines)—Sealed 22d April—6 months for Inrolment.

To John Petty Gillespie, of Grosvenor Street, parish of Saint Mary, Newington, in the county of Surrey, Gentleman, for his invention of a new spring or combination of springs for the purpose of forming an elastic resisting medium—5th April—6 months.

To Samuel Brown, of Eagle Lodge, Old Brompton, in the county of Middlesex, Gentleman, for his invention of certain improvements on his former patent, dated December 4th, 1823, for an engine, or instrument, for effecting a vacuum, and thus producing powers by which water may be raised and machinery put it motion—April 25th—6 months.

To Francis Halliday, of Ham, in the county of Surrey, Esq. for his having invented an apparatus or machine for preventing the inconvenience arising from smoke in chimneys, which he denominates a wind guard—April 25th—6 months.

To John Williams, of the Commercial Road, in the county of Middlesex, ironmonger, and ships' fire hearth manufacturer, for his invention of certain improvements on ships' hearths, and apparatus for cooking by steam—April 27th—2 months.

To William Choice, of Strahan Terrace, auctioneer, and Robert Gibson, of White Conduit Terrace, builder, in the parish of Saint Mary, Islington, in the county of Middlesex, for their invention of certain improvements in machinery for making bricks—April 27th—2 months.

To Charles Kennedy, of Virginia Terrace, Great Dover Road, in the county of Surrey, surgeon and apothecary, for his invention of certain improvements in the apparatus used for cupping—April 29th—6 months.

To John Goulding, citizen of the United States of America, but now residing in Cornhill, in the City of

London, engineer, for his invention of certain improvements in the machines used for carding, stubbing, slivering, roving, or spinning wool, cotton, waste silk, short stapled hemp and flax, or any other fibrous materials or mixture thereof—May 2d—6 months.

To Arnold Buffurn, late of Massachusetts, in the United States of America, but now residing in Jewin Street, in the City of London, hat manufacturer, (being one of the people called quakers) and John M'Curdy, of Cecil Street, Strand, in the county of Middlesex, Esq. in consequence of communications, made to them by a certain foreigner residing abroad, and discoveries by themselves, for improvements in steam engines—May 6th—6 months.

To Sir Robert Seppings, Knight, a commissioner and surveyor of our navy, of Somerset House, in the county of Middlesex, for his invention of certain improvements in the construction of fids or apparatus for striking top masts and top gallant masts in ships—May 6th—6 months.

To William Fenner, of Bushell Rents, Wapping, in the county of Middlesex, carpenter, for his invention of improvements in machinery or apparatus for curing smokey and cleansing foul chimnies—May 6th—6 months.

To Alexander Allard, de la Court, of Great Winchester Street, in the City of London, Esq. for his invention of a new instrument, and improvements in certain well known instruments applicable to the organ of sight—May 6th—6 months.

To Joseph Schaller, of Regent Street, in the county of Middlesex, ladies' shoe-maker, for his invention of certain improvements in the construction or manufacture of clogs, pattens, or substitutes for the same—May 6th—6 months.

To Edward Heard, of the parish of St. Leonard, Shoreditch, in the county of Middlesex, chemist, for his invention of a certain new composition or compositions to be used for the purpose of washing in sea and other water —May 8th—6 months.

To Levy Zachariah, jun. of Portsea, in the county of Hants, pawnbroker, for his new invented combination of materials to be used as fuel—May 8th—6 months.

METEOROLOGICAL JOURNAL, April and May, 1826.

1826.	Thermo.		Barometer.		Rain in inches.	1826.	Thermo.		Barometer.		Rain in inches.
	Higt.	Low.	+	—			Higt.	Low.	+	—	
April.						May.					
26	54	37	29,70	29,68	,1	11	62	43	30,14	30,05	
27	48	37	29,50	station.	,125	12	56	35	30,20	30,18	
28	43	31	29,90	29,80	,025	13	56	36	30,15	station	
29	45	31	30,00	29,90		14	63	30	30,09	30,05	
30	52	27	30,12	30,08		15	68	42	30,10	30,07	
May.						16	68	30	30,09	station	
1	49	32	30,20	30,16		17	66	43	30,09	station	
2	62	30	30,10	30,04		18	73	46	30,09	30,04	
3	50	31	30,02	30,00		19	71	40	29,94	29,80	
4	46	36	30,04	30,02	,05	20	65	45	29,90	29,74	
5	52	37	30,06	30,00	,025	21	70	37	30,03	29,99	
6	48	36	30,00	29,99		22	73	42	30,04	30,00	
7	52	35	30,01	29,99	,025	23	69	42	30,00	29,90	
8	59	38	30,08	30,01		24	68	47	29,87	29,78	,75
9	64	31	30,04	station.		25	58	48	29,74	29,66	,225
10	64	33	30,04	station.							

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37′ 32″ N. Long. 0° 3′ 51″ W. from Greenwich.

1826.	Thermo. Max.	Thermo. Min.	Barometer. Morn.	Barometer. Even.	Wind.	Weather.
APRIL.						
25	54	40	29,82	29,71	N. W.—W.	Sun and showers of hail and rain.
26	56	44	29,57	29,54	N. W.	Ditto—cloudy—wind.
27	44	39	29,30	29,53	N.—W. N.	Rain $\frac{5}{16}$ inches.
28	46	34	29,70	29,75	N.	Stormy—snow—frosty morning.
29	48	36	29,80	29,90	N.	Ditto—ditto—ditto.
30	52	38	29,94	29,99	N.	Fair—ditto—ditto.
MAY.						
1	52	40	30,05	30,02	N.—N. E.	Ditto—clear—ditto.
2	60	39	29,95	29,88	N. E.	Ditto—ditto—ditto.
3	48	40	29,88	29,93	N.—N. E.	Cloudy—slight rain—ditto.
4	45	40	29,90	29,91	N.	Ditto—ditto—ditto.
5	51	40	29,90	29,96	N.—N. E.	Ditto—ditto—ditto.
6	48	40	29,90	29,91	N.—N. E.	Stormy—hail—rain and wind.
7	50	42	29,91	29,93	N. E.	Ditto—showers—wind—ditto, frost.
8	61	44	29,92	29,91	N. E.	Fair—clear—ditto.
9	61	40	29,91	29,89	N. E.—E.—S.E.	Ditto—ditto—ditto—frost.
10	65	40	29,89	29,90	E.—N. E.	Ditto—ditto—ditto—ditto.
11	63	47	29,93	30,00	N. E —N.	Thunder clouds—slight rain.
12	54	43	30,05	30,10	N. E.	Cloudy—fair.
13	59	43	30,12	30,00	N. E.—E.	Fair—clear.
14	60	44	29,97	29,95	N. E.	Fair—sun—clouds.
15	60	44	29,96	29,98	N. E.—E.	Ditto—ditto—ditto.
16	66	44	29,98	29,94	E.—N. W.	Ditto—ditto—ditto.
17	69	50	29,95	29,95	N. W.—W.	Ditto—ditto—thunder clouds.
18	69	59	29,95	29,88	S. W.	Sun—clouds—and slight showers.
19	72	54	29,78	29,62	S. W.	Fair—clear.
20	65	49	29,60	29,78	S.E-N. W.-N.E.	Ditto—ditto.
21	65	50	29,85	29,90	N. E.	Ditto—ditto.
22	72	52	29,92	29,89	N. E.	Ditto—ditto.
23	66	53	29,86	29,76	E.—N. E.—N.	Cloudy—slight showers.
24	63	53	29,73	29,68	N. E.	Ditto—rain $\frac{1}{16}$ inches.

HITCHEN, HERTS. W. PERKS.

Lat. 51° 56′ 20″ N. Long. 0° 16′ 30″ W. from Greenwich.

CELESTIAL PHENOMENA, FOR JUNE, 1826.

D.	H.	M.	S.	
3	1	0	0	☾ in conj. with δ in Aries.
4	3	0	0	☾ in conj. with A in Tau.
4	12	0	0	☾ in conj. with 2 κ in Tau.
5	0	0	0	☉ eclipsed, invisible at London.
5	5	54	0	Ecliptic Conjunction or ● New Moon.
5	18	0	0	♀ in conj. with ε in Gem.
5	22	0	0	☽ in conj. with ζ in Taurus.
6	1	0	0	☽ in conj. with ♄ long. 23° in Gem. ☽ lat. 1° 55′ S. ♄ lat. 1° 1′ S. dif. lat. 44′
6	21	0	0	☽ in conj. with ν in Gem.
9	18	0	0	☽ in conj. with 1 α in Can.
9	19	0	0	☽ in conj with 2 α in Can.
12	19	54	0	☽ in □ first quarter.
13	0	0	0	♂ Stationary.
15	0	0	0	☽ in conj. with i in Virgo.
15	20	0	0	☿ in conj. with ι in Taurus.
15	22	0	0	☽ in conj. with ♂ long. 5° in Scorpio ☽ lat. 2° 22′ S. ♂ lat. 1° 21′ S. diff. lat. 1° 1′
17	6	0	0	☽ in conj. with ν in Libra.
17	10	0	0	☽ in conj. with λ in Libra.
17	15	0	0	☽ in conj. with 1 β in Scor.
17	15	0	0	☽ in conj. with 2 β in Scor.
18	19	0	0	☽ in conj. with ζ in Oph.
19	10	54	0	Ecliptic opposition or ○ full moon.
19	15	0	0	☾ in conj. with 1 μ in Sag.
19	16	0	0	☾ in conj. with 2 μ in Sag.
20	17	0	0	☾ in conj. with d in Sagitt.
21	12	44	0	☉ enters Cancer.
21	19	0	0	☾ in conj with β in Cap.
26	16	25	0	☾ in □ last quarter.
30	8	0	0	☾ in conj. with δ in Aries.

the waxing ☽ moon—the waning ☾ moon.

Rotherhithe. J. LEWTHWAITE.

LITERARY AND SCIENTIFIC NOTICES.

AFRICAN EXPEDITION.—Intelligence has been received from our African Travellers by which we learn that Captain Clapperton early in December passed through Hio, (the Yariba of the Arabs,) reaching by the middle of the month, Jennah, a considerable town of that kingdom, after a very fatiguing journey, through thick woods, meeting with the most friendly reception from the natives, who possessed numerous horses, and were expert equestrians.

From Jennah to Katunga, the capital of Hio, is about 30 days journey distance, (perhaps from 250 to 300 miles,) and the Niger (Kowara) is thence only three days march, Captain C. and his servant, as well as Captain Houston, had suffered from the country fever; but were recovered, enjoying a healthier climate on their route from Jennah, which lay over the Kong mountains. By the last accounts received, they were half way to Katunga, in 8° 23′30″, and the elevation above the sea estimated at 2500 feet. From a place called Engua, Captain C. writes that his fellow-traveller, Mr. Pearce, had died on the preceding day, the 27th of December; while Dr. Morison and his servant, both unable to proceed, had returned to Jennah, and fell victims to this fatal climate.

The other division of the Expedition had made its way to Dahomey, being received by the King and his captains in a most hospitable manner. Mr. Dickson had also experienced a seasoning fever; but on recovery, had a conference with his Majesty of Dahomey, and on the last day of the year left his Court with an escort of 50 armed men, and 100 bearers, under the command of a relation of the King, for a town called Shar, seventeen days journey towards the north, being situated to the south-west of Yaury. Mr. James had returned to the coast.

Mr. H. W. Dewhurst, Surgeon, has in the press a Dictionary of Anatomy and Physiology, to be published in Parts, purporting to contain a complete System of Practical Anatomy and Physiology; the work will form a guide to the student in the dissecting room, and be found useful to the medical practitioner.

Also by the same Author, Synoptical Tables of the Materia Medica, corresponding to the London Pharmacopœia.

RUSSIAN CANALS—The Russian Government has ordered the immediate construction of Canals, to unite the following rivers. Viz. the Moskwa and the Volga; the Scheksna and the northen Dwina, it is intended by uniting these rivers by this means to make a direct communication between the ports of Archangel and St. Petersburgh, and so furnish a conveyance for indigenous productions, towards the Baltic. The rivers Meinen and the Weichsel are also to be joined across the kingdom of Poland.

Dr. Barry, of Paris, has in a forward state, Experimental Researches on the influence of Atmospheric Pressure upon the Venous Circulation, Absorption, and the Prevention and Cure of Hydrophobia, and the Symptoms arising from every species of Poisoned Wounds.

The Rev. Fred. Nolan, is printing at his private press, Harmonical Grammars of the Principal Ancient and Modern Languages, viz. the Greek, Hebrew, Chaldee, Syriac, and Samaritan, the Italian, Spanish, Portuguese, German, and Modern Greek: the work will be in octavo.

OMOGRAPHY.—The Invention of a new art by a M. Aiguebelle, of Paris, to which the name of Omography has been given, is talked of: it is said to afford an extraordinary facility in executing, not only all that has hitherto been done by engraving and lithography, but also the effects of the pencil and the stump, which neither the graver nor the crayon has yet been able to accomplish.

Mr. Curtis has in the press, a fourth edition of his Treatise on the Physiology and Diseases of the Ear, in which he has shewn what may be performed in Acoustic Surgery, particularly in cases of Deaf and Dumb.

There is announced, as preparing for publication, a Work by P. F. Robinson, Architect, containing a series of Designs for Farm Buildings, with a view to prove that the most simple forms may be rendered pleasing and ornamental by a proper disposition of the rudest materials. In the course of the work, the village church and parsonage, will be introduced together with the school-house. Occasional ideas will be added for ornamental root-houses, and seats to decorate the Pleasure Ground.

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Recent Patents.

To MATTHEW BUSH, *of West Ham, in the County of Essex, Calico Printer, for his Invention of certain Improvements in Machinery, or Apparatus for Printing Calicoes and other Fabrics.*

[Sealed 7th October, 1824.]

THE principal feature of novelty claimed under this patent is the employment of small rollers with engraved surfaces, for printing portions of the calico or other fabrics with any desired pattern, which the patentee denominates repeating rollers. The general construction of the machinery to which these rollers are adapted does not appear to be new, and is therefore only introduced to shew the manner in which the repeating rollers are to

be employed; but as there is much ingenuity in the contrivances, and we are not aware that the same sort of machinery has been published before, we shall exhibit them, and explain their constructions and operations, that the intentions of the patentee may be more perfectly understood.

Plate XVII. fig. 1, is a section taken crosswise of the machine; fig. 2 is a section taken lengthwise, in which the mode of passing the calico or other fabric through the machine and the progress of the printing apparatus will be clearly seen. *a*, is a central standard, supporting the bed, *b*. Upon this bed an endless blanket, *c*, *c*, is extended, and passed over a series of rollers, several of which being in an apartment beneath that wherein the machine stands, are not shewn in the figure. The cloth or other fabric about to be printed, is to be coiled upon a roller, which is placed in bearings below. From thence the cloth proceeds upwards in the direction of the arrow, over a guide roller to the bed, *b*; and being stretched smoothly over the bed breadthwise, the fore end of the cloth is conducted down between the tension rollers, *d*, to the receiving roller.

The repeating roller above described, by which the print is to be given to the cloth, is shewn at *e*; its surface is engraved with a pattern, and it is mounted in a carriage having arms, *f*, *f*. Above the roller is a box, *g*, which contains the printing-ink, and the ductor rollers which communicate the ink to the printing roller: there being flexable scrapers as usual, acting against the surface of the printing roller, to remove the superfluous ink. The upper part of the carriage, *f*, has a stem, *h*, passing through a socket in the sliding frame, *m*, and upon the top of this stem a weighted compound lever, *i*, bears for

the purpose of giving pressure to the printing roller, *e*. The weight, *j*, at the end of this lever, can be increased or diminished at pleasure, so as to give a greater or less pressure to the printing roller, which as it traverses across the table, produces the printed pattern upon the cloth.

The evolutions of this machine are effected by a rotatory power, applied to the axle of the wheel, *k*, which by means of a bevel gear and crank, (not shewn in the figure, but which may readily be conceived,) gives a reciprocating motion to a connecting rod, *l*, attached by a joint to the sliding frame, *m*, of the carriage of the ink box, ductor, and printing roller, and thereby moves the carriage to and fro.

This frame, *m*, slides upon the side ribs, *n*, *n*, of the standards, and moves very steadily, so as to guide the printing roller, in a perfectly parallel course: which having passed over the breadth of the cloth, and given the impression, runs up an inclined plane, *o*, while the cloth is shifting ready to receive another impression on the return of the printing roller, caused by the crank above mentioned, in its rotation pushing the rod, *l*, back again, and thereby driving the sliding frame, carriage, printing roller, and its appendages to the opposite side.

The traversing of the printing roller being now understood, as caused by the reciprocating action of the crank rod, *l*, the mode by which the cloth is shifted after having been printed is next to be explained. The wheel, *k*, has two segments of teeth upon its periphery which are calculated to take at intervals into the toothed wheel, *p*, upon the axle of *d*, one of the rollers, by which the tension of the cloth is effected: and by giving a certain quantity of revolution to this roller, causes a certain length of the endless web, and the cloth with it, to be drawn over the table.

When the first segment of teeth has passed the toothed wheel, *p*, the roller, *d*, remains quiescent, and the cloth lies ready to receive the impression by the lateral traversing of the printing roller, *e*, as before described, and by the time that the printing roller has reached the extremity of its course, that is, run across the breadth of the cloth, and given the impression, the rotation of the wheel has brought the other segment of teeth into gear with the wheel, *p*, and turning it round shifts from the table, *b*, that portion of the cloth which has been last printed, and brings another portion of the cloth on to the table in its place, ready to be printed. By the time that the second toothed segment has ceased to act upon the wheel, *p*, the cloth being stationary upon the bed, *b*, the printing roller, *e*, has descended from the inclined plane, *o*, and traversing over the cloth gives another impression.

In this way by the continued rotation of the wheel, *k*, the gear is turned, which actuates the crank rod, *l*, and causes the sliding frame, with the ink ductor and printing roller, to move to and fro over the cloth, and by the occasional agency of the toothed segments of the wheel, *k*, the cloth is shifted from time to time so as to receive a succession of impressions, exactly registering or fitting together, so as to produce a continued pattern, and the cloth, as it becomes thus printed, is coiled upon the receiving roller, *q*, the blanket, *c*, in an endless web passing round through the machine, as shewn by the arrows, over a series of rollers, as before explained.

Fig. 3, shews another machine in section, which is designed for printing the ornamental borders of shawls, in which a similar kind of repeating roller is employed for giving the impression or pattern. The piece of cloth, or other fabric, on which the ground or central parts of the

shawls have been previously printed or stained by any of the ordinary modes, is coiled upon the roller, *a*, and placed, as shewn, with the pivots of the roller turning in bearing, but held tight by a tension cord and weight in the ordinary way. The table is represented at *b*, *b*, it is fixed to a long tube or socket, *c*, *c*, which is enabled to turn round horizontally upon an upright shaft, *d*, but is furnished with stops, placed in convenient situations so as to allow the tube to move one quarter round only, for the purpose of printing the different parts of the borders of the shawls at right angles to each other.

There are a series of rollers mounted in arms attached to the table, and moving with it, which carry or conduct the piece of fabric about to be printed, and also the blanket which covers the table; *e*, is the roller that the blanket is coiled upon, which blanket passes from thence over the face of the table, *b*, *b*, and is received upon the roller, *f*, on the opposite side. The cloth or other fabric is conducted from the roller, *a*, between guide rollers over the table, *b*, *b*, above the blanket, to the series of extending rollers, *g*, *g*, and ultimately is received upon the roller, *h*.

The printing roller, *i*, which in this instance appears to be of the block kind, that is designed to give the impression by colour deposited upon the raised parts of its surface, is mounted in a carriage in connection with ductors and inking rollers, *k*, *k*, the whole of which are intended to traverse over the table, *b*, in the act of giving the impression. The carriage of this printing apparatus is connected to a sliding frame, *l*, which moves along rebates or bevelled ledges in the upper frame, *m*, *m*, *m*. The roller, with its carriage and sliding frame, is drawn across the table by the rotation of a winch, which turns a

pinion, *n*, taking into the rack of the bar, *o*, this bar being attached to the sliding carriage.

When the printing roller has thus been made to traverse over the table, and give the pattern of the border on one side of the square of the shawl piece, the carriage and printing rollers are to be raised up by the lever, *p*, and the upper frame brought forward by turning the winch and shaft, *q*, *q*, which causes the frame to run upon the side rails of its standards, *r*, *r*, until the printing roller, *i*, is brought into the proper situation for giving the impression to that part of the shawl which is to constitute the opposite side of the square; the printing roller is then lowered down to its place, and passed over the table as before, the weight above giving it sufficient pressure.

The pattern of the border having been thus given to the shawl piece on the sides next the selvages, it is now necessary to print the same crosswise, that is, at right angles, in order to perfect the squares of the several shawls into which the piece is to be cut. This is done by again raising the printing roller off the surface of the fabric, and then turning the table round horizontally, until it has reached the stop where it is confined, and the printing of the other parts of the borders at right angles to the selvages, is now performed by a similar method to that already described, of moving the sliding carriage and printing roller over the surface of the table, and shifting both the printing apparatus and the fabric as occasion requires, until the whole piece is printed.

As the ink or colour with which the border has been printed is laid on in considerable quantities by the raised parts of the surface of the printing roller, it is necessary that this ink or colour should be dried before the fabric is coiled upon the roller, *h*; and in order to allow time

for this, the fabric is extended by the series of rollers, *g*, *g*, so as to permit heated air to pass over the surface, and effect the operation of drying.

Another variation of this machinery is proposed, in which the carriage of the printing roller is stationary, and the fabric is made to traverse under it; but it is scarcely necessary to describe this, as the invention consists, as before said, in the employment of small rollers, which the patentee calls repeating rollers, for printing portions of fabric with colours or patterns, whether such rollers shall be designed to print from engraved lines or raised surfaces, either to produce patterns or devices, or portions of the ground colours of such printed fabrics.

[*Inrolled May*, 1825.]

To STEPHEN WILSON, *of Streatham, in the County of Surry, Esq. in consequence of communications made to him by a certain Foreigner residing abroad, for a new manufacture of Stuffs, with Transparent and Coloured Figures, which he calls Diaphane Stuffs.*

[Sealed 25th November, 1824.]

THIS invention is the production of a novel kind of stuff goods by a peculiar process of manufacture, which is to be denominated *diaphane stuff.* The patentee states that this new fabric consists of "a firm or band net work, figured on solid or perfect ground, exhibiting coloured patterns thereon." The method of making this particular kind of stuff can only be well understood by a practical weaver of figured goods.

The threads or yarns which are intended to constitute the warp or chain of the fabric, are to be wound with great care evenly upon the beam or roller, and when placed in a loom, are to be edged with cords, for the purpose of forming a strong selvage. They are then to be woven by the intervention of shoots of a coarse material, forming by that means an open fabric, merely for the purpose of giving stability to the warp threads, while the patterns or figures are painted or printed upon them; the coarse material thus shotten is intended to be removed to give place to the weft-thread that shall be afterwards introduced, when the ultimate weaving is performed.

This fabric is now to be printed or painted in the ordinary manner, with such forms, characters, or devices as are intended to constitute the pattern. It is then to be streamed and otherwise operated upon, as is usually practised, for the purpose of fixing the colours, and then washed, in order to remove the gummy matters.

When the fabric has been thus treated, it is to be placed in the loom again, and some of the coarse shotten threads being removed at the commencement of the piece, the warp or chain threads are to be carefully passed through the spaces of the reed, and then secured, taking great care that the pattern or design painted thereon be not disturbed or distorted, the remainder of the coarse weft threads being drawn out in succession as the work approaches them, that is, as the stuff becomes woven.

The process of weaving is now to go on as usual, by raising and depressing portions of the chain or warp, and passing the weft or shoot through between, which is to be done in a loom furnished with harness; and having the pattern of the diaphanous or transparent parts read in, as in ordinary figure weaving; or, which is much to

be preferred, in a loom of the kind called the *Jaquart*, which the present patentee introduced from France, and became proprietor of in 1820. (See Lambert's and Wilson's patents, Vol. II. pages 95 and 255 of this Journal.)

To enter further into the detail and minutiæ of the process of weaving this particular kind of fabric would be uninteresting, and perhaps unintelligible to many of our readers; it will, therefore, suffice to say, that by the above mode of proceeding, a fabric is produced, called diaphane stuff, having certain portions left so thin as to be transparent, upon which are painted or printed coloured figures, which as a whole constitutes a kind of fabric new in this country, the exclusive manufacture of which is claimed under this patent.

[*Inrolled May*, 1825.]

To William Shelton Burnett, *of New London Street, in the City of London, Merchant, for his Invention of certain Improvements in Ships' Tackle.*

[Sealed 25th November, 1824.]

These improvements consist in the employment of an instrument or apparatus to be applied to various parts of the tackle of a ship, by means of which a certain degree of elasticity is afforded in the tension of the cable, or in any of the other ropes connected to the tackle. This instrument is a cylindrical box, containing a worm spring, and to the acting extremity of this spring the cable or

other tackle is to be connected, the fixed end of the spring being made fast to a staple, set in a stationary part of the ship, or by any other mode secured. By the play of this spring any extraordinary tension or strain of the rope is relieved; and when the effect of the strain is passed, the rope is held with the same tension as before.

In Plate XVII., fig 4, this apparatus is shewn, consisting of a cylindrical box, *a*. At that extremity of the cylindrical box an eye, marked *b*, is fixed into the end plate, for the purpose of securing the apparatus to a stable part of the ship; at the reverse extremity of the box, an eye, *c*, is formed in the end of a rod, which rod passes through the end plate of the box, and is connected to the acting extremity of the worm spring within. In this figure the apparatus is shewn in a quiescent state, but in fig. 5, the external cylindrical box, *a*, is removed, and the worm spring, *d*, is shewn in action. The eye, *b*, is supposed to be made fast to some firm part of the ship, and the hook of a pulley block over which the rope or tackle is passed, is attached to the eye, *c*, and drawn tight. Any extraordinary tension or strain being now given to the rope, the coils of the spring, *d*, will be drawn together, and that elasticity afforded to the tension of the rope which will prevent its being injuriously strained, and allow it, by the reaction of the spring, to return to its former state of tension.

The patentee calls this a compensating apparatus, to relieve the strain of a ship's cable, or any of the other ropes connected to the tackle; it must be made of such dimensions and strength as are suitable, according to the magnitude of the vessel, and the particular part to which it is to be applied. It may be constructed of any suitable metal, and may be attached in the way above de-

scribed, or in the reverse direction; that is, by connecting either the fixed eye, or the eye of the movable rod to the stable part of the ship, and the reverse end to the rope, as may be deemed most eligible.

[*Inrolled May*, 1825.]

To THOMAS PARKINS, *of Baches Row, City Road, in the County of Middlesex, Merchant, for his new invented mode of Paving in a certain manner parts of Public Roads, whereby the Draft of Waggons, Carts, Coaches, and other Carriages is facilitated.*

[Sealed 29th March, 1825.]

THE patentee proposes to place lines of granite or other hard stones closely wedged together along ordinary roads, for the wheels of carriages to run upon, as he conceives that the principal cutting up or wearing away of the road is caused by the action of the wheels. These lines will constitute stone railways, but their upper surfaces are intended to be level, or nearly so, with the surface of the other parts of the road, and are not to have flanges or any other raised parts to confine the running wheels.

Plate XVII., fig. 10, shewn, are modes of constructing these lines of stones as they would appear in perspective: *a, a, a,* are separate pieces of granite or other hard stone, flat on their upper and under surfaces, but formed in angles at their edges, and fitting together by what the patentee calls bird's mouth joints, so that each individual

stone is supported by the stones on each side of it, and by this contrivance it is considered that the lines of stones will be secured and prevented from sinking partially.

In case the ground should be infirm, it is proposed to place cross pieces of wood as bearers at the joints; but if the ground is tolerably solid and firm, the stone will lie very securely without bearings, and this is the way in which the patentee proposes to place them in general.

Fig. 11, shews another method of joining stones together, for the purpose of forming road-ways. In this figure, which represents the stones in section, grooves or mortice holes are seen, formed in the edges of the stones, and into these are inserted iron bars or blocks, *a*, *a*, *a*, for the purpose of holding the stones together. These are also placed upon wooden bearings as the former, when that is found to be necessary from the instability of the ground.

There is likewise another mode proposed for connecting the stones together by means of irons, formed in the figure of a cross, the longer arms of the cross extending side ways, so as to take hold of the adjoining stones. One of the proposed stones, cut in this manner, is shewn at fig. 12.

It is further suggested, that iron plates shall be employed under some circumstances, instead of stones, for the upper surfaces of the wheel-ways. These are to be long plates of iron of suitable breadths, as shewn in the section, fig. 13, at *a*, *a*, which are to be secured to the under line of soft stones, *b*, *b*, by bolts and nuts, or by any other convenient mode.

It will of course be necessary to ram the earth or gravel on the sides of the lines of stones very hard, in order to keep them firmly in their places, and the lengths must

be well secured by abutments in certain parts, to prevent their shifting longitudinally.

[*Inrolled May*, 1825.]

To WILLIAM HOPKINS HILL, *of Woolwich, in the County of Kent, Lieutenant in our Royal Artillery, for his Invention of certain Machinery for Propelling Vessels.*

[Sealed 26th February, 1825.]

THE invention proposed as the subject of this patent, is a contrivance to be employed for propelling, instead of the ordinary paddle wheel with boards fixed radiantly round its periphery. The improvement consists in adapting a number of paddles to the arms of a wheel, (four are proposed,) each paddle moving upon an axis, the pivots of which are supported by the arms of the wheel. These paddles have each two bent levers, extending from them, which are linked to the levers of the next paddle by short straps or rods, so as to connect the movements of all the paddles together, or as the patentee expresses it, "so that by connecting their heads by short connecting rods, a particular quantity of alternating movement is permitted to the paddles; this alternating movement is reciprocating between paddle and paddle, and is effected on the rotation of the wheel, by the resistance of the water against which they act; that is to say, that the movement of one paddle upon its axis causes thereby the movement of the next in a contrary direction, and so on round the circle."

This account does not appear to be very explanatory of the principle of the invention; but by reference to the figures, perhaps the intention of the patentee may be discovered, though we do not perceive by what means the paddles are made to reciprocate upon their axes.

Plate XVII., fig. 6, is a side view of the machinery, the wheel being shewn by dots; fig. 7, is one of the paddles detached, with its bent levers extending in the arc of a circle, and having eyes at their extremities to receive the bolts of the connecting rods; *a, a, a, a,* are the four paddles vibrating upon their axles, which, as before said, are supported by the arms of the wheel; *b, b,* are the levers; and *c, c,* the connecting rods, or links, by which the ends of the levers of one paddle are attached to the levers of the next paddle. Supposing the wheel to be in action, *d, d,* is a line representing the surface of the water in which the paddle is to act. In this part of the wheel's revolution, the paddles assume radiant positions, the acting paddle being perpendicular in the water, but when the wheel has proceeded some distance further in its course, a second paddle is brought into play, the whole assuming the positions shewn in fig. 8, the respective paddles falling into the positions shewn by the diagram, fig. 9, during the revolution of the lower half of the wheel.

The cause of the paddles and their levers assuming the positions here shewn, as the wheel revolves, does not appear to be sufficiently explained in the specification by the words, "this alternating movement is reciprocating between paddle and paddle, and is effected on the rotation of the wheel by the resistance of the water against which they act." It may be so, but the whole looks more like a project to be tried, than a consequent result

of such a combination. The contrivance, however, of forming and connecting the paddles by means of bent levers, in the way shewn, appears to be the substance of the invention claimed; we shall, therefore, without going into a mathematical display of the angles and curves produced by these paddles, and their levers, as the wheel revolves, which must be obvious to every one, proceed to the concluding paragraph of the specification, which throws all the light upon the subject that we are enabled to give. The words of the patentee are these.

"Having given a description of the various particulars necessary to be attended to, in the construction of this mechanism, I have to observe, that the object I have in view in these improvements, is a better and more perfect application of the propelling power. In this specification I claim as my invention, the peculiarities of the paddle movements, namely, their reciprocating action upon each other as described. I do not mean to claim the movement of paddle boards upon horizontal axles, but the peculiar application of that movement. I also disclaim the different parts constituting this mechanism which are in general use; but claim those peculiarities of construction, proportion, and arrangement, necessary to effect the paddle movements before described. I do not limit myself to the particular quantity of their alternating movement, although I believe those set forth to be the best; neither do I confine myself to the precise method of effecting the reciprocating action between the paddles."

[*Inrolled August*, 1825.]

To GEORGE WYCHERLEY, *of Whitechurch, in the County of Salop, Saddler, for his new and Improved Method of making and constructing Saddles.*

[Sealed, 4th December, 1824.]

THE improvements upon which this patent is founded, are arranged under three heads: the first is the introduction of an additional padding to the fore part of the saddle, for the purpose of fitting the back of the horse more perfectly than ordinary saddles packed in the common way. The object of this is to prevent the saddles from riding on to the neck of the horse, which it is said to effect in a satisfactory manner; as the straps and girth keep it steady without the necessity of a crupper. The second head of the invention applies to side saddles, and consists in the introduction of a strap connected to the girth, which strap is passed over friction rollers mounted in the saddle tree, and to the end of the strap the stirrup iron is attached, so that the foot of the rider pressing the stirrup, draws the strap and with it the girth, and by those means keeps the saddle firm and tight to the back of the horse. The third head of the invention is the adaptation of the packing first described to the side saddle, for the purpose of fitting it more perfectly to the horse's back.

The mode of constructing these improved saddles may be very easily conceived. A padding made in the usual way is to be attached by stitching to that part of the under side of the saddle tree, which is nearest to the shoulders and neck of the horse; it is to be made thick in front, and diminishing as it recedes, so as to fall into the ordinary

figure of the under side, or packing of the saddle towards the back part.

As respects the side saddle, two angular straps are to be affixed to the saddletree on the off side, for the purpose of receiving the buckle and strap to which the girth is attached, and another strap connected to the girth is to proceed up between the opening of the angular straps, and to pass over one or more rollers placed in the under side of the saddle, and thence proceeding downwards on the near side of the horse, the stirrup iron is to be suspended to it, so that the pressure of the foot of the rider may act in giving additional tension to the girth.

The introduction of the packing before described to the under part of the side saddle is to be effected in the way already explained, and being intended for the same purpose needs no further description.

[*Inrolled, June,* 1825.]

To GEORGE BORRADAILE, *of Barge Yard, Bucklersbury, in the City of London, Merchant and Furrier, for an Invention communicated to him by a person residing in foreign parts of an Improved Method of making or setting up of Hats or Hat Bodies.*

[Sealed 17th November, 1825.]

THE foundations of men's hats, upon the outside of which the beaver, down, or other fine fur is laid to produce a nap, are usually made of wool felted together by hand, and

formed first into conical caps, which are afterwards stretched and moulded on blocks to the desired shape. There has, however, been some sort of machinery employed of late years for setting up hat bodies, that is, winding loose filaments of wool into the form of these conical caps, or foundations of hats, and it is a machine for this purpose, constructed in a new way, that forms the subject of the present patent.

The invention consists in the employment of a machine for setting up hat bodies, having several cones or frustrums of cones revolving upon their axes, and also traversing or vibrating to and fro in horizontal directions: by the operations of which, slivers of wool are taken from a carding engine, and wound in different directions upon the periphery of a double cone, or frustrums of two cones, their bases meeting together in the middle of the machine; and by the winding process so performed the filaments of wool are crossed for the purpose of taking hold of each other, so as to produce a matted or laid substance; and the substance thus made, being afterwards cut round the larger periphery, or middle of the double cone, and slidden off at both ends, produces two woollen caps or conical bags, which are to be wetted, and shrunk and felted together in the usual manner, and are then ready to be employed as the bodies or foundations of hats.

Plate XVIII., fig. 1. represents a front view of the machine; fig. 2, an end view of the same; fig. 3, is a view looking down upon the top of the machine; and fig. 4, a section taken through the middle of the machine crosswise, the similar letters referring to the same parts of the machine in the several views; *a*, *a*, are two frustrums of cones rounded towards the apex, their bases being placed together. These bear upon other frustrums of cones, *b*, *b*,

and *c, c,* which turn on pivots in bearings: their axles being in oblique positions, and inclining considerably from the horizontal. The two front cones, *b, b,* have bevelled toothed rims affixed to their bases, which gear into each other at the point where they meet, (see fig. 1.) One of the cones, *b,* is made to revolve by means of a bevelled pinion, *d,* (fig. 4.) which takes into the teeth of its rim, and the other cone, *b,* is driven round also by its rim gearing into the former. The larger cones or frustrums, *a, a,* bearing upon the cones, *b, b,* are carried round by the friction of the surfaces in contact, and the cones *c, c,* which turn freely upon their axles, are made to revolve also by the same means.

A band from a rigger connected with a carding engine, (or any other convenient rotatory agent) is passed round the pullies, *e, e,* in front of the machine, for the purpose of giving rotation to the spindle, *f,* upon which spindle there is another smaller pulley, *g,* from whence a band proceeds to a pulley, *h,* in order to give rotatory motion to the pinion, *d,* that drives the cone, *b.*

Let the sliver of wool, *i, i,* be now conducted from the dofter of a carding engine, placed at any convenient distance behind the machine, to the upper side of the frustrums, *a, a;* and the cones being made to revolve in the manner before described, will cause the sliver of wool to be wound round the periphery of the frustrums, *a, a,* in a uniform layer. In order, however, to obtain a crossing or diagonal laying of the sliver upon the frustrums, *a, a,* the machine is made to turn round horizontally upon a foot pivot, *k,* in front, and upon a swivel joint, *l,* at top, to which the back part of the machine is suspended by a bent rod, *m, m.*

The regular vibratory motion of the machine is effect-

ed by the adjustable lever or bar, *n*, attached at one end to the brace, *o*, and at the other to the crank-wheel, *p*. This wheel, *p*, is put in motion by means of a band passed from a rotatory part of the carding engine or other moving agent round the pulley, *q*, and there being a pinion, *r*, upon the shaft of the pulley which takes into the teeth of the crank-wheel, *p*, that wheel is thereby made to revolve.

It will now be seen, that the rotation of the crank-wheel, *p*, draws the lever or connecting bar, *n*, and that the machine is by those means moved to and fro horizontally into the position shewn by dots in fig. 3, and that when the machine is brought into the situation represented by dots, at *z*, *z*, *z*, *z*, the sliver of wool will pass diagonally over the frustrums, *a*, *a*, in the manner represented by the faint lines, at *s*, *s*; and that when the machine is removed into the other position represented by dots at *y*, *y*, *y*, *y*, then the sliver will be wound upon the frustrums in the opposite diagonal direction, shewn by the faint lines, *t*, *t*.

Thus a cross laying of the sliver of wool upon the frustrums, *a*, *a*, is effected, which produces a matted woollen material, that after having been cut asunder and felted, is rendered fit for the bodies or foundations of beaver and other hats.

The patentee states, " I wish to observe, that though I have described the particular construction and action of the machine employed by me for setting up hats or hat bodies, and which construction and action I prefer to any other that I am at present acquainted with, yet I do not mean to confine myself to the precise forms and dispositions of all its parts: as my principle of causing the double cone or frustrums of cones to revolve by the friction of their surfaces against other rotative cones, for

the purposes above recited, may be effected by other arrangements slightly varied from the mode shewn in the drawing; and which if upon the same principles, (viz.) causing the upper frustrums of cones to revolve by the friction of their surfaces against other rotatory frustrums placed below, or on the sides of the operating frustrums, so as to enable the winding frustrums to receive and lay the sliver of wool in different directions over its surface, in the manner above described, I shall consider to be an imitation of my machine, and coming within the meaning of my above recited patent."

[*Inrolled May*, 1826.]

To Jonathan Downton, *of Blackwall, in the County of Middlesex, Shipwright, for his Invention of certain Improvements on Machines or Pumps.*

[Sealed 18th July, 1825.]

These improvements apply to pumps, and consist in a mode of working three pistons in one pump barrel at the same time, for the purpose of discharging a continued stream of water. The rods which support the pistons slide one within the other, and their upper ends being connected to separate cranks, upon a rotatory shaft, cause one piston to descend in the pump barrel while another rises.

Plate XVIII. fig. 7, is an external view of the pump barrel, with the cranks and connecting rods; fig. 8, is a section of the same, shewing the situation of the three

pistons; *a*, is the rising main, by which the water ascends into the pump barrel, *b*, *b*, through the foot valve, *c*, when a partial vacuum is produced in the barrel by the rising of the lower piston or bucket, *d*. The lower part of the barrel being now occupied with water, on the descent of the piston, *d*, the water passes freely through the valve of that piston; but when the piston, *d*, is raised again, the valve closes, and that portion of water above it is lifted to the middle part of the barrel: a fresh supply of water passing up the rising main to supply the partial vacuum below the piston. The central piston, *e*, descends at the same time that the lower one rises, and consequently the water raised by the lower piston, passes through the valve of the central piston, *e*. The piston, *e*, being now raised in turn, its valve closes, and the water is lifted higher up in the barrel, and the upper piston, *f*, descending at the same time allows the water to flow through its valve. The upper piston now rising lifts the water to the top of the pump barrel, from whence it is discharged through the nozle, *g*, and by the successive operations of the three pistons or buckets, *d*, *e*, and *f*, in the manner above described, a continued uninterrupted current of water is delivered from the nozle or spout, *g*.

Having described the situations, actions, and effects of the three pistons or buckets in one barrel, we proceed to explain the means by which they are made to perform their reciprocating movements. The impelling power, whether exerted by hand or otherwise, is applied to the crank shaft, *h*, upon which is a fly wheel, *i*, to regulate the motions. The rod of the lower piston, *d*, is solid, and proceeds straight up through the rods of the other pistons, which are hollow; that of the piston, *e*, is a hollow tube, sliding upon the former, and within the hollow rod of the

piston, *f*. At the upper ends of these rods, loops, or slots, *j*, *k*, and *l*, are affixed for the friction wheels, *m*, *n*, and *o*, upon the cranks of the main shaft to act in. It will be seen in fig. 7, that bent rods, *p*, and *q*, are respectively attached to the hollow sliding rods of the pistons, *e* and *f*, for the purpose of enabling the cranks to act upon them.

The construction of the whole apparatus having been now described, it only remains to say, that by the rotation of the main shaft, *h*, which carries the three cranks, their friction wheels, *m*, *n*, and *o*, are made to act in the loops or slots, *j*, *k*, and *l*, and to raise and depress the several pistons successively, so as to effect the regular and uninterrupted discharge of water at the nozle, as above stated.

[*Inrolled January*, 1826.]

To William Hirst, *of Leeds, in the County of York, Cloth Manufacturer, for his Invention of certain Improvements in Spinning and Slubbing Machines.*

[Sealed 11th January, 1825.]

The principal feature of novelty in this specification, is the introduction of two rows of spindles into a spinning machine, instead of one row as usual, by means of which the patentee proposes to spin nearly twice the quantity of wool, in any given time, that ordinary spinning machines are capable of effecting. In order to accomplish this object, some slight alterations in the dispositions of the parts of the machinery are proposed,

which will be seen by reference to the figure of the spinning apparatus, exhibited in Plate XVIII.

Fig. 5, is a side view of the spinning machinery; *a, a*, are the creels of slubbing, placed as usual; *b, b*, are additional creels of slubbing; *c*, is the situation of a pair of guide rollers, under which the slubbings are passed to the spindles. The upper or pressing roller is intended to have a plain smooth surface, the lower roller to have small flutes, in order to hold the slubbings with sufficient firmness, to allow of their being extended by the receding of the carriage, *d*, and at the same time spun by the rotation of the spindles, *e, e*, turned by cords extending from the rotatory drum, *f*, as usual.

It is to be observed of the creels, *a, a*, and *b, b*, that there are four ranges of them, placed side by side, extending the whole width of the machine, and that there are also two rows of spindles, *e, e*, corresponding to the creels, that is, one row of spindles as usual extending along the back of the carriage, and one additional row placed in front between every two of the former row.

The manner in which these spinning machines act, is so well understood, that a description here will be unnecessary, it only remains to say, that the claims of the patentee as to invention in this instance are limited to the introduction of the two additional rows of creels, and the one additional row of spindles, whether the same are applied to that description of spinning machines called mules or to billies.

[*Inrolled, May*, 1826.]

To THOMAS DWYER, *of Lower Ridge Street, in the Parish of St. Andeau, in the County of the City of Dublin, Silk Manufacturer, for his Invention of certain Improvements in the Manufacture of Buttons.*

[Sealed, 13th October, 1825.]

THE subject of this invention may be expressed in very few words; it consists merely in covering metal discs with any kind of fabric, for the purpose of making buttons. Our readers, perhaps, like ourselves, are at a loss to imagine what novelty there can be in this mode of making buttons, which has existed certainly ever since the earliest recollection of every one living; and probably for many centuries before. Least, however, we should have overlooked the improvements, and formed an opinion too hastily, we give the specification at full length.

"My improvement in the manufacture of buttons, is effected or made by sewing, netting, or knitting covers of suitable stuff, of silk, wool, linen, cotton, or of any other material, or of any of these mixed with other materials; or pieces of metal commonly called blanks, or on concave shells or shapes of metal, (which may be cast in moulds, or which form being flat, the edges may be raised, bent, or turned) so that one side of the said blanks, or of the said shells, or shapes of metal, (both of which are well known to metal button manufacturers) shall represent the basis of the form or shape of the buttons intended to be manufactured, and the other side shall afford accommodation for the coverings being sewn, netted, or knitted on."

[*Inrolled January*, 1826.]

To David Oliver Richardson, *Kerseymere and Cloth Printer, and* William Hirst, *Manufacturer, both of Leeds in the County of York, for their Invention of certain Improvements in the Process of Printing or Dyeing Woollen and other Fabrics.*

[Sealed 26th July, 1825.]

This invention consists in covering parts of the surfaces of woollen fabrics, with a certain composition that will resist the chemical action of the coloured liquor, into which the fabric is to be immersed in the process of dyeing: in order that when the cloth so covered is withdrawn from the dyeing vat, and the composition is removed from its surface, those parts which have been thus guarded, may have retained their original colour, and not have been in any degree affected by the dyeing liquor.

The composition is to be made by mixing about five stone of wheaten flour, with about four gallons of water; making a smooth paste, about the consistency of treacle. It is not to be boiled, we presume, as the specification is silent upon that subject.) After this mixture has stood for three or four days, the yolks and whites of forty raw eggs are to be added, and the whole stirred well together. The composition is then ready for use; and is to be laid upon the fabric by means of a brush, when large portions of the surface are to be protected, or by printing blocks, when small parts of the surface are to be preserved from the ground colour in the form of a pattern. A small quantity of powdered glass or shells, or fines and, is then to

be sifted over the composition, for the purpose of assisting to set and bind it firmly; this, however, may be dispensed with, if the composition is thick, and can be dried soon. The fabric being thus prepared, is then ready to be immersed in the dyeing vat, and treated as usual.

When the dyeing process has been performed, the fabric is to be withdrawn from the vat, and the composition being scraped off, or otherwise removed, presents those parts which were covered perfectly free from the colour of which the other portions of the surface of the fabric have been dyed.

For the purpose of further illustration, the patentee describes the process of dyeing and figuring a lady's shawl in several colours. Suppose one side of the shawl is to be dyed of a plain blue, all over its surface, and the other side is to have a rose coloured ground, with a white border, to be afterwards printed with a chintz or other pattern. The shawl being stretched upon a square frame, that side which is to be blue, and that part of the other side intended for the border, is be covered with the composition as a guard, leaving only that part exposed which is designed to be dyed a rose colour; the frame with the shawl, is then immersed in the dyeing vat, and remains there until it has imbibed its tint.

The shawl being now withdrawn from the dye, that side which is intended to be blue, is to be cleared from the composition, and the other side covered completely. It is then immersed in the blue dye, and after that operation has been performed, the whole of the composition is to be removed, and the shawl will appear blue entirely on one side, and rose coloured, with a white border, on the other; which being afterwards printed in the ordinary

way, with a chintz or other suitable pattern, finishes the colouring of the shawl.

The patentees state, that their claim of invention is the "covering of parts of woollen or worsted fabrics, which are to be dyed, or dyed and printed, with a composition which resists the action of the dye when the fabric is in the dye kettle." How this can be exclusively maintained, we do not see, as table covers, and a variety of other articles, which have been coated and dyed in this manner for a considerab lelength of time, having purple or green grounds, with yellow or white borders and corners. The patentees also claim the application of "the particular composition herein before described to that particular purpose." This particular composition, if it has not been so used before, they have a right to, but certainly not to claim the whole in the broad way in which they have stated it.

[*Inrolled January*, 1826.]

To GEORGE SAYNER, *of Hunslet, in the Parish of Leeds in the County of York, Dyer, and* JOHN GREENWOOD, *of Gomersall, in the same County, Machine Maker, for their Invention of certain Improvements in the mode or manner of Sawing or Cutting Wood and Timber by Machinery.*

[Sealed 11th January, 1825.]

THIS invention applies to the operative parts of a saw mill, for cutting blocks of timber into planks, rafters, or

other pieces. The principal feature of novelty herein proposed is the employment of two circular saws; the axis of one being above the upper surface of the block of timber, that of the other being below it, and the peripheries of these circular saws extending a little beyond each other's cutting line, for the purpose of cutting the block of timber completely through at one operation.

The construction of the machine, and its mode of operating, as far as we can understand it from the very imperfect drawing accompanying the specification, appears to be very similar to ordinary saw mills. Plate XVIII. fig. 6, is a side view of the machine; *a, a,* is the bed or beam which supports the whole of the operative parts; *b, b,* is the block of timber to be cut, which is carried forward upon rollers, *c, c, c.* The circular saws are represented at *d, d,* working in vertical directions; these are made to revolve by bands embracing pullies upon their axles, which bands are actuated by a rigger upon the rotatory shaft of a steam engine, water wheel, or other adequate power.

The same actuating mechanical power that turns the saws, gives also a rotatory motion to a friction roller, *e,* which by its rotation carries the block of timber forward in a horizontal direction, and brings it against the edge of the saws, *d, d,* by which the block becomes cut through into planks, as it will be perceived that the peripheries of the saws extend beyond each other's cutting line.

The block of timber is kept steady upon its carriage, by means of a weighted lever, *f,* which presses down the rod and roller, *g.* This lever must be confined at the extremity of its shorter arm; but in what way is not shewn in the figure; and the weight at the reverse end gives that power to the lever which keeps the block

steady. There are also perpendicular rollers placed in the machine, for the purpose of guiding the block in a lateral direction, and these are made to shift their situations in order to suit blocks of different thicknesses. When it is desired that the planks should be cut into rafters or laths, that may be done by the employment of another circular saw, *h*, turning in a horizontal direction, which may be actuated by a band and pulley, in a similar manner to the former, and work at the same time, so that the machine may perform both operations at once.

In order to cut the blocks of timber into planks of different thicknesses, the saws must be made capable of being placed at any required distance apart; this is done by the introduction of collars of the proper thickness upon the axles of the saws between each two cutting blades, and these are then made fast, by screwing a nut against the outer blade. When it is desired to cut the block both into planks and rafters, or scantling, it is proposed to pass the plank through guides, in order to keep them steady while the cross cuts are made by the horizontal saws.

An apparatus of this kind is further proposed for rasping wood, for the use of dyers, and other chemical purposes; in which process the circular saw blades are to be placed close together, without collars, so as to constitute files or rasps, by the rapid rotation of which the block of wood operated upon is quickly reduced to small particles or saw dust.

[*Inrolled July*, 1825.]

To Robert William Brandling, *of Low Gosworth, near Newcastle upon Tyne, Esq. for his Invention of certain Improvements in the Construction of Rail Roads, and in the Construction of Carriages to be employed thereon and elsewhere.*

[Sealed 12th April, 1825.]

The object of the patentee appears to be to construct carriage wheels, suited both to common roads and rail ways, by forming a groove in the periphery or tire of the carriage wheel, which groove is intended to run upon a narrow rib on the upper side of an iron rail, when used upon a rail way; but when employed upon ordinary roads, the larger diameter of the periphery of the wheel is to come in contact with the ground. There are also some contrivances proposed for enabling the wheels to run along curves or turn angles in the road, by means of elevations upon the rail, but the whole of the contrivances are so very indistinctly represented and described that we cannot clearly comprehend the intended construction.

A scraper is to be attached to each wheel of the carriage, for the purpose of removing from the groove in the periphery the dirt which may adhere to it when travelling on ordinary roads, in order that the grooves of the wheels may be in a fit condition to pass on to the rail way. The ribs of the rails appear to be made with different elevations and sliding pieces, as contrivances for turning out of the direct line, but in what way they are to effect their object we do not perceive. There is, however, enough in the specification, to show that grooves are pro-

posed to be formed in the peripheries of the running wheels, which is exactly the mode described in the specification of Mr. W. H. James's patent, granted 5th March previous, for improvements on railways, and in the construction of carriages to be employed thereon. (See our tenth vol. page 301). There is, therefore, evidently a want of originality in the present contrivance.

[*Inrolled September*, 1825.]

To ADAM EVE, *of Louth, in the County of Lincoln, Carpet Manufacturer, in consequence of a Communication made to him by* WILLIAM AUGUSTUS PRINCE, *a Foreigner, residing abroad, for certain Improvements in Manufacturing Carpets, which he intends to denominate Prince's Patent Union Carpets.*

[Sealed 15th December, 1825.]

THE patentee commences his specification by describing the manner in which Kidderminster, Yorkshire, and Scotch carpetting is usually woven. The warp or yarn, he says, running lengthwise of the piece, is divided into four parts; to each of which parts a treadle is attached; two of the parts of the warp are operated upon by the treadles to receive the shoot which is to form the ground, and the other two treadles operate upon the warp, to receive the shoot, which is to form the figure or pattern. Were there no figure to the carpet, this manner of weaving would form two separate and distinct pieces of cloth, and where the ground and figure is equally divided there is as much ground

on one side as there is figures on the other; and it is the ground warps, and figure warps, and ground shutes and figure shutes, crossing or passing each other, which forms the figure and fastens the ground and figure together: therefore, of whatever extent the figure is, the same extent of the ground is hid under it, leaving a separation in the weaving between the ground and the figure; and it is the object of the present invention, by a peculiar mode of weaving, to form a union of the warp and weft throughout the whole carpet.

In weaving the improved union carpetting, after one or more of the ground shutes, and one or more of the figure shutes are thrown in, then one half part of the ground warp, and one half part of the figure warp, is made to rise or cross the other half parts, by means of two treadles being pressed down at the same time, and a binding shute or thread made of any suitable material is then introduced between the said warps while in that crossed position. The warps are then made to resume their former positions, and one or more ground and figure shutes thrown in as before. Then the warps are made to rise or cross as before; and the binding shute is again introduced; and so on alternately, until the piece of carpetting is completely woven.

It is the introduction of the binding thread or shute, (of whatever material it is made,) in the manner described, between every one or more of the ground and figure shutes, in the weaving of Kidderminster, Yorkshire, Scotch, or any other kind of carpetting, of whatever width, that constitutes the subject of this patent. The binding thread being introduced in the manner above stated, causes the combination or union of the ground and figure together; the binding thread not being visi-

ble, on either side of the carpet, and not in any degree injuring or affecting the beauty of the figure.

[*Inrolled January*, 1826.]

To Henry Constantine Jennings, *of Devonshire Street, Portland Place, in the County of Middlesex, Practical Chemist, for his Invention of Certain Improvements in the process of refining Sugar.*

[Sealed 22nd October, 1825.]

The object of this invention is to extract the colouring matter from raw or Muscovado sugar, which is proposed to be effected by passing rectified spirits through the sugar, placed in a suitable vessel, and which spirit, in discharging itself at the lower part of the vessel, carries with it the colouring matter, and leaves the sugar in a clarified state.

The mode of operating is this; place the raw, or Muscovado sugar in a conical vessel, having an aperture at bottom covered with copper wire gauze; the quantity of sugar proposed to be acted upon at one time, is from five hundred to one thousand pounds weight. Rectified spirits of wine, rum, brandy, or any other liquor being principally alcohol, which has very little affinity for saccharine matter, is then to be poured upon the top of the sugar, and having a great affinity for colouring matter, water, treacle, &c. of which the impu-

rities of the raw or Muscovado sugar consists, these impurities become taken up by the spirit, and descend with it to the bottom of the vessel, where it discharges itself.

This process may be facilitated by several well known modes, whereby liquids are made speedily to percolate through compact substances, whose particles are not in a state of actual cohesion; these means are hydrostatic, hydraulic, or hydropneumatic.

When the spirit has so far passed through this mass of sugar as to cease dropping, it is proposed to pour about thirty gallons of saturated syrup upon the top of the mass, which by penetrating through it, removes all the spirits, and leaves the sugar only moistened by the syrup, and ready for putting into the hogshead for sale.

The spirit which has combined with colouring matter and water, may be used again upon inferior sugar, and after it has become very thick, it may be rectified, and the spirit re-obtained in an uncombined state without much loss.

The patentee disclaims any novelty in the employment of the conical vessel, but limits his claim of invention to the a pplication of rectified spirits, being principally alcohol, for the purpose above stated; such rectified spirits having properties peculiarly adapted to that purpose, and performing the operation of refining more rapidly and effectually than any other liquid now in use for that purpose.

[*Inrolled, April,* 1826.]

[See J. Barlow's patent for his new method or process of bleaching, or clarifying, and improving the colour of sugars. Vol. X. page 190.]

To JOHN PHILLIPS BEAVAN, *of Clifford Street, in the County of Middlesex, Gentleman, in consequence of Communications made to him by a certain Foreigner residing abroad, for an Invention of a Cement for Building and other purposes.*

[Sealed 7th December, 1825.]

THIS invention is called Vitruvian cement, and consists of a composition of marble, flint, chalk, lime, and water, which when dry is capable of being brought to a high state of polish.

The proportions are one part of pulverized marble, one part of pulverized flint, and one part of chalk, mixed together and sifted through a very fine sieve; to this is to be added, one other part of lime, which has been slacked at least three months. To this is to be added a sufficient quantity of water to make the whole into a thin paste, and in that state it is to be spread as thinly as possible over a coarse ground, and brought to a smooth surface by the trowel. This cement when dry, may be polished with pulverized Venetian talc, until the surface has become perfectly smooth and shining.

In order to apply this Vitruvian cement to buildings, it is necessary that the parts to be covered should be first prepared with a rough ground or under coat, which may be done with the following materials. Take equal parts of the coarsest river sand, and the sand which is pulverised from mill stones; mix them together, and add a third part of lime, which has been slacked for about

three months; to these put as much water as will bring the composition into a paste; and when it is about to be used, add a fifth of very fine sifted lime, and apply it as common plaster.

If the above Vitruvian cement is required to imitate the appearance of marble, that may be done by painting the veins like marble upon its surface, after the cement has been brought to a smooth surface by the trowel; and as soon as the paint has become dry, the polishing process may be performed with the pulverized talc as above described, when the work may be considered to be finished.

In order to increase the lustre of the polish, the patentee proposes to employ a sort of varnish, to be made by mixing two pints of water, with four ounces of white soap, eight ounces of virgin wax, and eight ounces of nitre, which are to be boiled together, till the substances are quite dissolved. When the cement is perfectly dry, this varnish is to be sprinkled over the surface, and when uniformly spread, is to be rubbed well with a linen cloth, until the lustre is sufficiently brought up. It is, however, to be observed, that this varnish is not claimed by the patentee; but is merely mentioned as a useful addition to improve the lustre and appearance of the cement, when a high polish is required, as in imitating marbles.

[*Inrolled, April,* 1826.]

Novel Inventions.

Spining Machines.

An improvement in spinning flax, cotton, wool, and silk, is about to be introduced by Mr. Molineux, of Stoke, in Somersetshire, for which he has just obtained a patent. The contrivance is extremely simple, and consists in the adaptation of a peculiar kind of spindle and bobbin, which is applicable to spinners' frames in general. The spindle has no flyer, and the bobbin turns upon a horizontal axle, receiving the filaments of whatever material is about to be spun in a direct line from the drawing rollers, or from copts or creels, instead of having it conducted at a considerable angle through the arm of a flyer; the bobbin and the carriage, in which its horizontal axle is suspended, is made to spin round rapidly, by means of a cord from a drum, as in the old spinning frames, by which the twist is given uniformly to the whole length of the filaments of flax, cotton, wool or silk under operation; and the taking up or coiling of the thread thus spun upon the bobbin, is affected by a wheel affixed to the axle of the bobbin, which is turned by the friction of a horizontal plate attached to and revolving with the carriage.

By this simple contrivance, the tension of the filaments is in a direct line, and the twist uniform throughout the whole length under operation, and the turning of the bobbin, for the purpose of taking up, is effected by so delicate a resistance, that the finest thread of flax, cotton,

or silk may be spun by this apparatus; indeed much finer than by any description of spinning machinery heretofore employed, having a spindle and flyer. In fact this appears to be the nearest approximation in effect to hand spinning that has ever yet been introduced, and under some circumstances will produce nearly twice the quantity than can be spun in mules or jenneys in any given time. When the specification of this invention has been enrolled, we shall take the earliest opportunity of reporting it in our Journal.

Morey's New Vapour Engine.

"Samuel Morey, Esq., a gentleman whose name is familiar to those who have devoted their attention to mechanical science, has obtained a patent for a vapour engine, which, in the opinion of competent judges, promises to answer well in practice. The vacuum in the cylinder is produced, by firing an explosive mixture of atmospheric air, and vapour from common proof spirits, mixed with a small portion of spirits of turpentine. A working model has been set in motion, and kept at work, without elevating the temperature of the fluid, from which the vapour is produced, to a higher degree than that of blood heat. Should no unforeseen difficulties present themselves in its operation on a large scale, it will be the greatest improvement which has been made for many years, particularly in its application to locomotive engines; as the weight of the materials required, to keep it in action for a considerable length of time, will be so small as not to be worth mentioning.

"A gentleman has gone to England, for the purpose of obtaining a patent in that country."—*Franklin Journal.*

Polytechnic and Scientific Intelligence.

SOCIETY OF ARTS.

NOTWITHSTANDING that the number of rewards, both honorary and pecuniary, bestowed by the Society of Arts during their late sessions have been but few in the class of mechanics, yet that committee has been unremitting in its attendance, and the inventions brought before them for approval, have been more than usually numerous; but for the most part, the subjects were either old, or inferior to others now in use for similar purposes, or impracticable schemes which could never be brought into operation, and in many instances trifling matters of too little importance to merit public attention.

The nature of these inventions will be perceived by the subjects brought before the committee as follows; and those which have been approved will be known by reference to the rewards bestowed by his Royal Highness the Duke of Sussex, see page 325.

Committee of Mechanics.

November 10th.—Dempster and Sim's paddle-wheel. The paddles are made to rotate by a pulley, or spur-wheel upon the axis of each, and an endless chain carries them round by the agency of a pulley on the central shaft—Siebe's tread-wheel for prisons, with short steps, rising sideways, for the persons to tread obliquely.—Siebe's tell-tale for steam-boilers, in which a ball descends as the water evaporates, and when a fresh supply is required,

opens the mouth of a tube, and causes a whistle to blow. – Griffinhoofe's pavement, bevelled on the tops of the stones, to form channels for holding gravel, in order to make foot-holds for the horses.—Jackson's mode of ventilating mines by an injecting air-pump at the top, with pipes leading into all parts of the mine, for forcing in fresh air.

November 17th.—M'Donald's telegraph and dictionary, in which intelligence is communicated by signals referring to three sets of figures in the book.—Woollcombe's mode of striking top-masts, by applying wedges to the fid holes, secured by iron bars, which are moved by screw jacks.—Gordon's night telegraph, consisting of a lozenge frame, with lantherns to be fixed to the mizen mast.—Gordon's dragg for drowned bodies, with sliding bars, intended to drop into holes or inequalities at bottom.

(To be continued.)

New Patents Sealed, 1826.

To Daniel Dunn, of King's Row, Pentonville, in the parish of Saint James, Clerkenwell, in the county of Middlesex, manufacturer of essence of coffee and spices, for his invention of an improvement or improvements upon the screw press, used in the pressing of paper, books, tobacco, or bale goods, and in the expressing of oil extracts, or tinctures, and for various other purposes in which great pressure is required—Sealed May 23rd—6 months for inrolment.

To Thomas Hughes, of Newbury, in the county of Berks, miller, for his invention of improvements in the method or methods of restoring foul or smutty wheat, and rendering the same fit for use—May 23rd—6 months.

To Francis Molineux, of Stoke, Saint Mary, in the county of Somerset, Gentleman, for having invented or found out an improvement in machinery for spinning and twisting silk and wool, and for roving, spinning, and twisting flax, hemp, cotton, and other fibrous substances. —May 23rd—6 months

To Thomas Parrant Birt, of the Strand, in the county of Middlesex, coach-maker, for his invention of certain improvements on, or additions to, wheel carriages—May 23rd —2 months.

To John Parker, of Knightsbridge, in the county of Middlesex, iron and wire fence manufacturer, for his invention of certain improvements on, or additions to, park or other gates—May 23rd—6 months.

To Dominique Pierre Deurbroucq, of Leicester Square, in the county of Middlesex, Esq., in consequence of a communication made to him by a person residing abroad, for an invention of an apparatus adapted to cool wort, or wash, previous to its being set to undergo the process of distillation—May 23rd—6 months.

To William Henry Gibbs, of Castle Court, Lawrence Lane, London, warehouseman, and Abraham Dixon, of Huddersfield, in the county of York, manufacturer, for their invention of a new kind of piece goods, formed by a combination of threads of two or more colours, the manner of combining and displaying such colours in such piece goods constituting the novelty thereof—May 23rd— 2 months.

To Louis Joseph Marie Marquis de Combio, a native

of France, but now residing in Leicester Square, in the parish of Saint Martin in the Fields, and county of Middlesex, in consequence of a communication made to him by a certain foreigner residing abroad, for an invention of certain improvements in the construction of rotatory steam-engines, and the apparatus connected therewith—May 23rd—6 months.

To James Barlow Fernandez, of Norfolk Street, Strand, in the county of Middlesex, Gentleman, for his invention of certain improvements in the construction of blinds, or shades for windows or other purposes—May 26th—6 months.

To Robert Mickleham, of Furnivals' Inn, London, civil engineer and architect, for his having invented or found out certain improvements in engines, moved by the pressure, elasticity, or expansion of steam gas or air, by which a great saving in fuel will be effected—June 6th—2 months.

To Henry Richardson Fanshaw, of Addle Street, in the City of London, silk embosser, for his invention of an improved winding machine—June 13th—6 months.

To John Ham, late of West Coker, but now of Holton Street, Bristol, in the county of Gloucester, vinegar-maker, for his invention of an improved process, for promoting the action of the ascetic acid on metallic bodies—June 13th—6 months.

To Thomas John Knowlys, of Trinity College, Oxford, Esq., in consequence of a communication made to him by a certain foreigner residing abroad, for an invention of a new manufacture of ornamental metal or metals—June 13th—6 months.

To Joseph Smith, of Tiverton, in the county of Devon, lace-manufacturer, for his having invented, or found out

an improvement on the stocking frame, and improved method of making stockings and other goods usually made on the stocking frame—May 23rd—6 months.

To John Loach, of Birmingham, in the county or Warwick, brass-founder, for his having invented, or found out, a self-acting sash fastener, which fastening is applicable to other purposes—May 23rd—6 months.

To Richard Slagg, of Kilnhurst Forge, near Doncaster, in the county of York, steel-manufacturer, for his invention of an improvement in the manufacture of springs, chiefly applicable to carriages—May 23rd—6 months.

METEOROLOGICAL JOURNAL, May and June, 1826.

1826.	Thermo.		Barometer.		Wind.	Weather.
	Max.	Min.	Morn.	Even.		
May.						
25	58	52	29,63	29,54	E.—N. E.	Rain $\frac{5}{16}$ inches
26	63	52	29,54	29,64	E.—S. E.	Cloudy—showers
27	63	52	29,68	29,73	S.	Ditto—heavy rain, $1\frac{1}{2}$ in. & thunder
28	55	50	29,76	29,70	N.	Cloudy—cold wind
29	53	49	29,68	29,74	N. E.	Ditto—heavy rain and wind
30	53	49	29,73	29,78	N. E.—N.	Ditto— rain and wind, rain $1\frac{1}{8}$ inches
31	60	50	29,78	29,76	N. E.—N.	Cloudy—small rain
June.						
1	55	50	29,75	29,74	N.	Ditto—and rain $\frac{1}{8}$ inches.
2	56	51	29,75	29,83	N.—N. E.	Rain, $\frac{5}{8}$ inches
3	62	51	29,90	29,99	N.	Fair—cloudy
4	62	51	29,91	29,93	W.—N. W.	Cloudy—slight showers
5	66	53	30,11	30,13	N.	Ditto and sun—fair
6	67	54	30,12	30,06	N.—N. W.	Ditto—ditto—ditto
7	67	55	30,06	30,07	N.E.—N. N. W.	Ditto—ditto—ditto
8	68	54	30,10	30,04	N. E.—E.	Ditto—ditto—ditto, brisk wind
9	74	56	29,93	29,86	E.—N. E.	Fair—clear
10	74	55	29,85	29,88	N. E.—E.—S.	Ditto—morn.—thund. & rain $\frac{15}{16}$ in.
11	70	57	29,92	29,97	N. E.—N.	Ditto—ditto—ditto, $\frac{1}{8}$ inches
12	76	59	30,05	30,08	N. E.—N.	Fair—clear
13	79	63	30,08	30,06	N. E.—N.	Ditto—ditto
14	78	63	30,06	30,04	N. W.	Ditto—ditto
15	78	60	30,02	29,94	W.—S. W.—E.	Ditto—ditto
16	67	54	30,05	31,05	N. E.—N.	Ditto—ditto
17	74	55	30,18	30,11	N. W.—W.	Ditto—ditto
18	75	60	30,11	30,13	N.—N. W.	Ditto—ditto
19	74	56	30,18	30,23	N.—N. W.	Ditto—ditto
20	71	55	30,24	30,24	N. E.—E.	Ditto—ditto
21	56	54	30,24	30,18	N. E.—E.	Cloudy—fair
22	68	54	30,18	30,18	N. E.	Fair—clear
23	75	54	30,18	30,22	E.	Ditto—ditto

D.	H.	M.	S.	
1	9	0	0	☾ in conj. with A in Tau.
1	19	0	0	☾ in conj. with 2 η in Tau.
2	13	0	0	☾ in conj. with ι in Taurus.
3	4	0	0	☾ in conj. with ζ in Taurus.
3	15	0	0	☾ in conj. with ♄ long. 28° in Gem. ☾ lat. 3° 8′ S. ♄ lat. 59° S. diff. lat. 2° 9′
4	19	36	0	Ecliptic Conjunction or ● New Moon.
7	0	0	0	☽ in conj. with 1 α in Can.
7	1	0	0	☽ in conj with 2 α in Can.
8	6	0	0	☽ in conj. with π in Leo.
12	1	24	0	☽ in □ first quarter.
12	6	0	0	☽ in conj. with i in Virgo.
13	13	0	0	☽ in conj. with ♂ long. 10° in Scorpio ☽ lat. 1° 54′S. ♂ lat. 1° 54′ S. diff. lat. 0°
14	14	0	0	☽ in conj. with ν in Libra.
14	18	0	0	☽ in conj. with λ in Libra.
14	23	0	0	☽ in conj. with 1 β in Scor.
14	23	0	0	☽ in conj. with 2 β in Scor.
16	19	0	0	♀ in conj. with α in Leo.
17	1	0	0	☽ in conj. with 1 μ in Sag.
17	1	0	0	☽ in conj. with 2 μ in Sag.
18	2	0	0	☽ in conj. with d in Sagitt.
18	19	12	0	Ecliptic opposition or ○ full moon.
19	5	0	0	☾ in conj with β in Cap.
22	6	0	0	♀ in conj. with ρ in Leo.
22	23	35	0	☉ enters Leo.
24	20	0	0	☿ in conj. with α in Leo.
26	9	3	0	☾ in □ last quarter.
27	15	0	0	☾ in conj. with δ in Aries.
29	3	0	0	☾ in conj. with 2 κ in Taurus
29	20	0	0	☾ in conj. with ι in Taurus.
30	12	0	0	☾ in conj. with ζ in Taurus.
30	16	0	0	☿ in conj. with ρ in Leo.
30	23	0	0	♄ in conj. with η in Gemini.
31	11	0	0	☾ in conj. with ν in Gem.
31	20	39	0	♀ in conj. with ♃ long. 15° in Virgo ♀ lat. 1° 6′ N. ♃ lat. 1° 6′ N. diff. lat. 0′

the waxing ☽ moon—the waning ☾ moon.

Rotherhithe. J. LEWTHWAITE.

METEOROLOGICAL JOURNAL, MAY AND JUNE, 1826.

1826.	Thermo.		Barometer.		Rain in inches.	1826.	Thermo.		Barometer.		Rain in inches.
	Higt.	Low.	+	—			Higt.	Low.	+	—	
MAY.						JUNE.					
26	63	50	29,72	29,65	,225	11	72	50	30,07	29,98	,075
27	66	47	29,82	29,78	,1	12	80	47	30,20	30,16	
28	68	45	29,86	29,73		13	82	44	30,20	station.	
29	56	49	29,79	29,70		14	81	51	30,20	30,18	
30	56	48	29,84	29,82	,10	15	82	41	30,14	30,00	
31	60	49	29,87	29,85	,075	16	67	52	30,26	30,20	
JUNE.						17	74	42	30,30	30,27	
1	63	49	29,85	29,80	,05	18	78	52	30,25	30,24	
2	56	49	29,90	29,80	,2	19	71	52	30,34	30,34	
3	64	45	30,05	29,97		20	74	52	30,37	station.	
4	67	41	30,10	station.		21	73	42	30,37	30,30	
5	69	48	30,20	30,19		22	74	51	30,30	30,29	
6	71	48	30,23	30,16		23	76	46	30,29	station.	
7	65	52	30,15	station.		24	79	43	30,29	station.	
8	69	50	30,15	30,11		25	82	58	30,30	30,25	
9	75	50	30,00	29,95							
10	74	48	29,95	station.							

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37′ 32″ N. Long. 0° 3′ 51″ W. from Greenwich.

LITERARY AND SCIENTIFIC NOTICES.

Arctic Overland Expedition.—Accounts have been received in this country from Captain Franklin, dated 6th September, on the Great Bear Lake. It is stated, that during the summer three several expeditions, under the Captain himself, Lieutenant Back and Dr. Richardson, had been out, preparatory to the main attempt in the ensuing year. Captain F. had penetrated to the mouth of the Mackenzie River, which he found to discharge itself into an open sea. Here was a single island, (now named Garry Island,) and of considerable altitude, from the summit of which the sea, to the northward, appeared quite clear of ice. To the westward, the coast was visible for a great distance, the view terminating with a range of high mountains calculated to lie in about 139°. W. longitude.

The expedition was in the full enjoyment of health and spirits, well supplied, and looking sanguinely forward to the approaching campaign. Dr. R. had travelled all round the Lake.

Mr. P. F. Robinson, Architect, is preparing for publication a New Vitruvius Britannicus, comprehending Plans and Elevations, drawn from actual admeasurement, and accompanied by Scenic Views of all the most distinguished Residences in the United Kingdom, remarkable for their Architectural Features, classing with Buildings of the first consequence. Some Historical Notices will be added to each.

Paper Clocks.—Among the recent inventions which have arisen out of the ingenuity of our Parisian neighbours, is a novel one, of making clocks of paper.

These *cartologes, ou pendules en carton*, are asserted to be an improvement on metallic machinery.

They are said never to require oil, are wonderfully light, very simple in their movements, and possess (according to the manufacturers,) many other advantages. Persons who have seen them perform, report that they are really good things, going well for a duration of about thirty hours after winding up; their cost is about thirty francs.

Survey of South America.—The Adventure and Beagle sailed a short time since on their voyage to survey the coasts of South America, under the command of Captain King, whose talents and qualifications for a service of this kind are well known; the vessels are well provided with chronometers and philosophical instruments. Of Patagonia and the Terra del Fuego, we have but an imperfect knowledge; the only intelligence worth notice respecting these parts, within the last half century being furnished by the Journal of Captain Weddell, lately published.

Mr. Ackermann has nearly ready for publication, a translation from the Spanish of the History of Ancient Mexico, originally written in Italian, by the Jesuit Father Llanvigero. This work, which is not so well known in Europe as it deserves to be, contains not only a complete and accurate Description of the extensive regions composing New Spain, but also the Annals of the Mexican Nation, from its establishment in North America, to the overthrow of the Empire of Montezuma; also a narration of the Conquest of Mexico by Cortez, and Dissertation on the Natural and Political History of that interesting Country. The translation is by Mr. J. J. Mora; it will form two quarto volumes, and be illustrated by about twenty engravings.

The second part of Simpson's Anatomy, for the use of Artists, is in a very forward state, so that it may be expected almost immediately. A specimen of a ha[illegible]ographed on the prospectus, conveys a favourable idea of the prints.

In the Press.—A Concise Historical View of Galvanism, with Observations on its Chemical Properties, and Medical Efficacy in Chronic Diseases. By M. La Beaume, F.L.S.

LIST OF PLATES IN VOL. XI.

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LONDON:

SHACKELL, ARROWSMITH AND HODGES, JOHNSON'S-COURT, FLEET-STREET.

Somerville's Gun Lock.

Fig. 3.

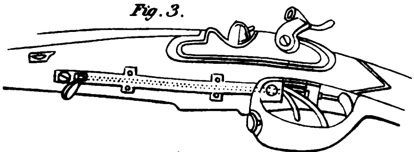
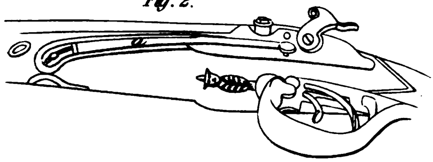
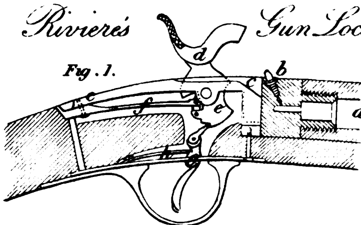


Fig. 2.



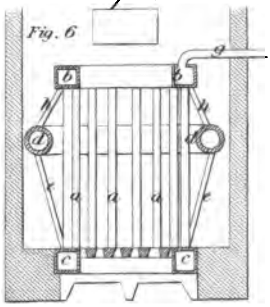
Riviere's Gun Lock.

Fig. 1.



Moore's Imp.d Steam Boiler.

Fig. 6



Foreman's Steam Engine.

Fig. 7.

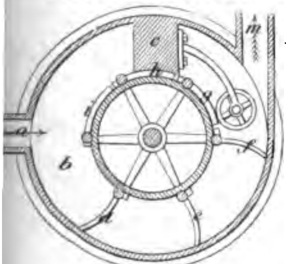
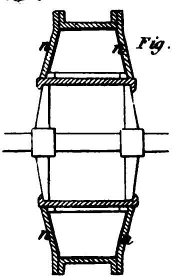
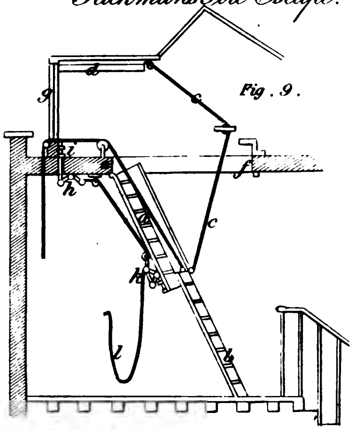


Fig. 8.



Rickman's Fire Escape.

Fig. 9.



Taylor's Liquor Cocks.

Fig. 4.

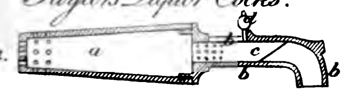
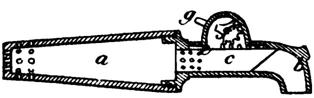
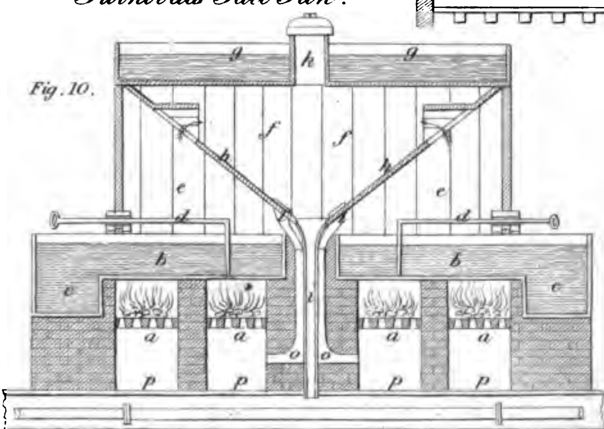


Fig. 5.



Furnival's Salt Pan.

Fig. 10.



Crowder's Impd. Lace Machine.

Fig. 1.

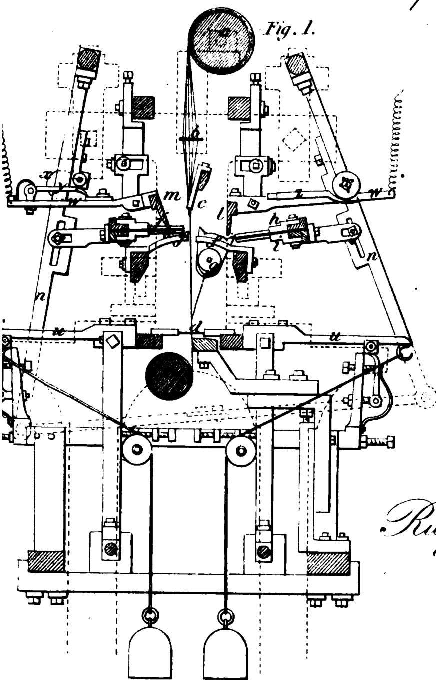
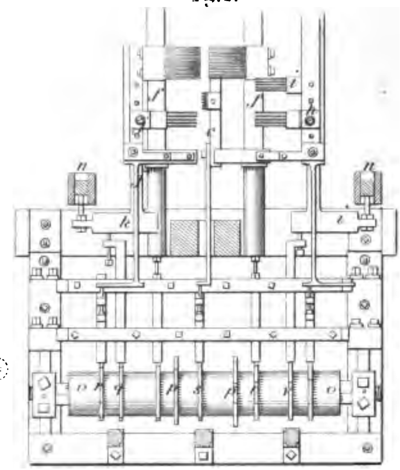


Fig. 2.



Ridgway's Impd. Liquor Cocks.

Fig. 4.

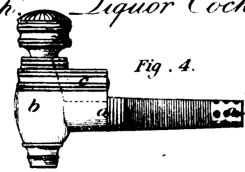


Fig. 5.

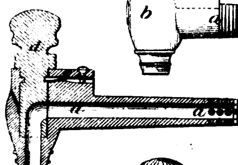


Fig. 6.

Jordan's
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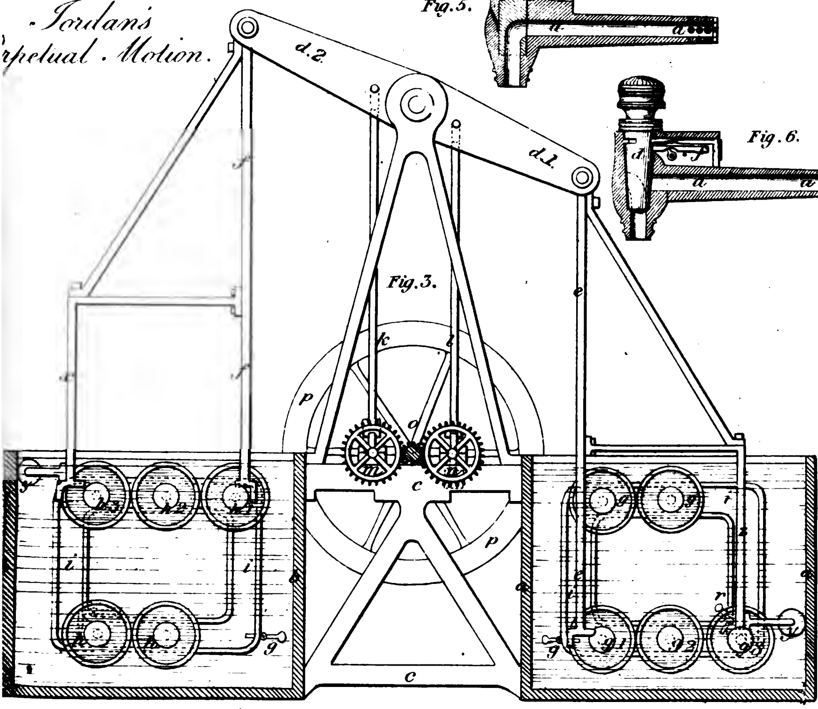
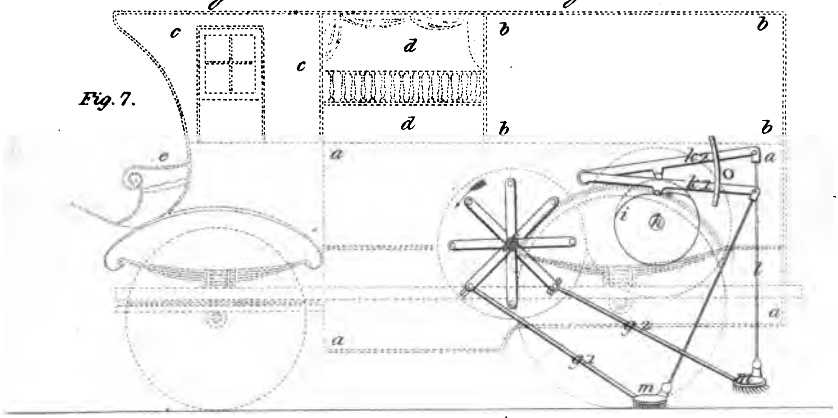
Fig. 3.



Gordon's Locomotive Carriage.

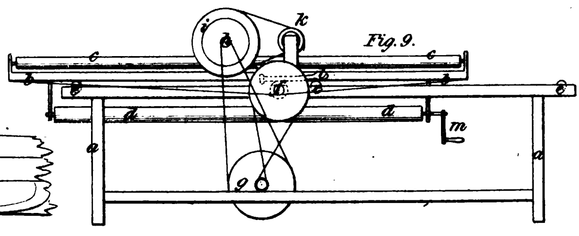
Fig. 7.



Gardner & Herberts Improved Machinery for Shearing & Cropping Woollen Cloths.

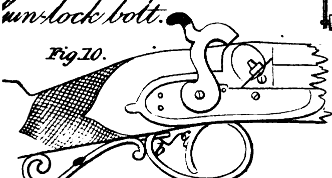
Fig. 8.

Fig. 9.



Richards' Impd Gun-lock bolt.

Fig. 10.



Atkins and Marriotts Impd Stoves & Grates.

Fig. 2.

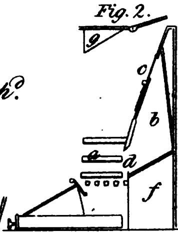
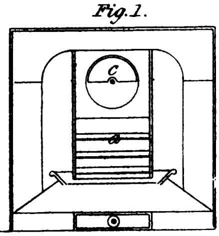


Fig. 1.



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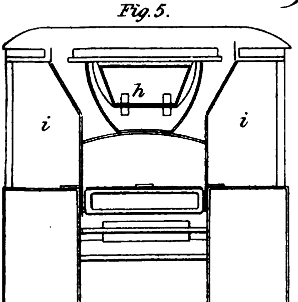

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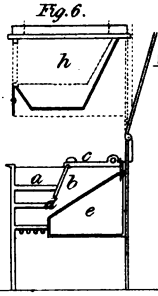
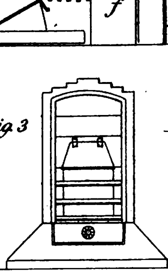


Fig. 3



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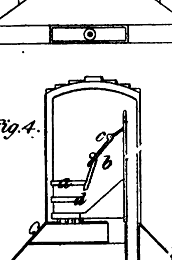


W. Newton delt. 1st Feby. 1826. S. Bellin sculpt.

Bloomfield & Luckcock's Propelling Apparatus.

Fig. 1.

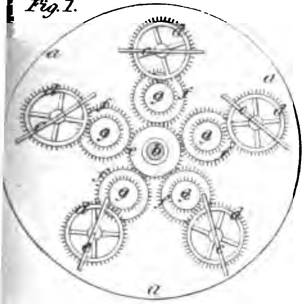


Fig. 3.

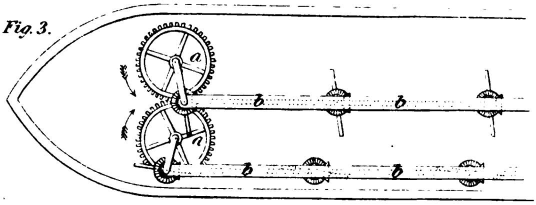


Fig. 2.

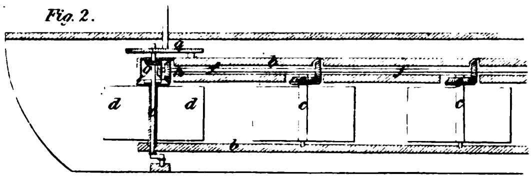


Fig. 4.

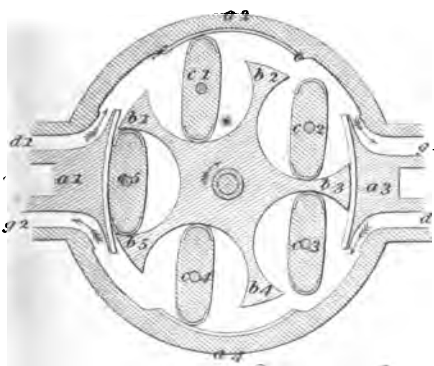
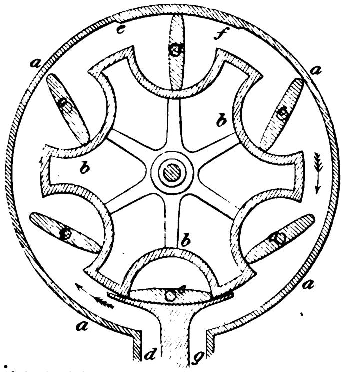


Fig. 5



Lindsay's Impd. Carriage-way.

Fig. 6.

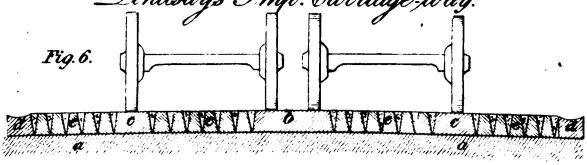
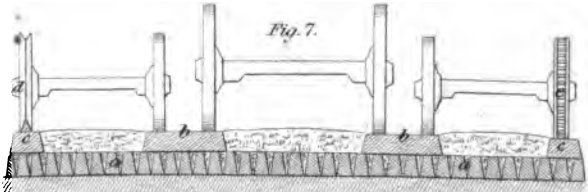


Fig. 7.



Fisher's Improved Railway.

Fig. 10.

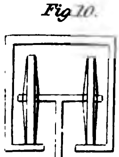


Fig. 8.

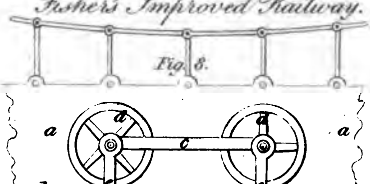
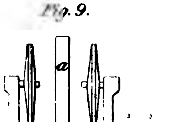


Fig. 9.



J. Newton delt. 1st Feby. 1826. T. Owen sculpt.

Perkins's propelling machinery.

Fig. 4.

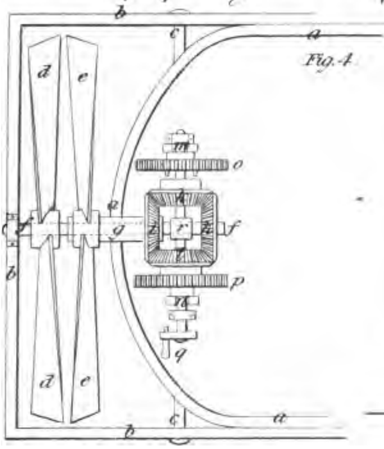
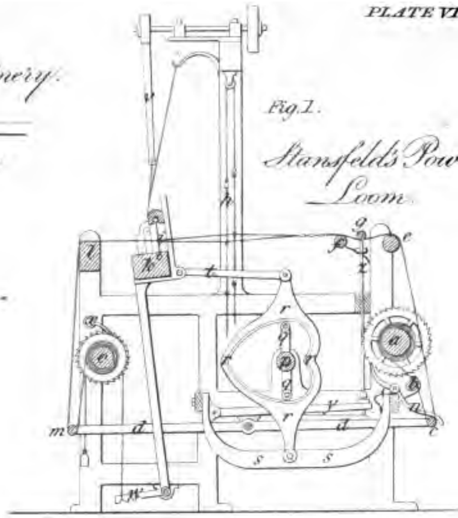


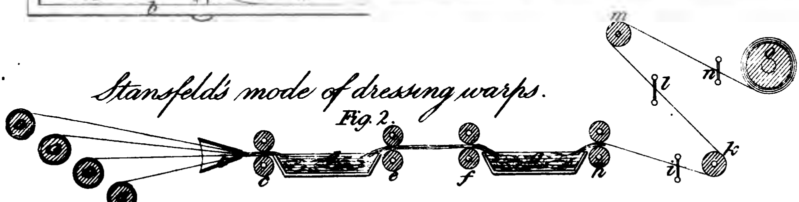
Fig. 1.

Stansfeld's Power Loom.



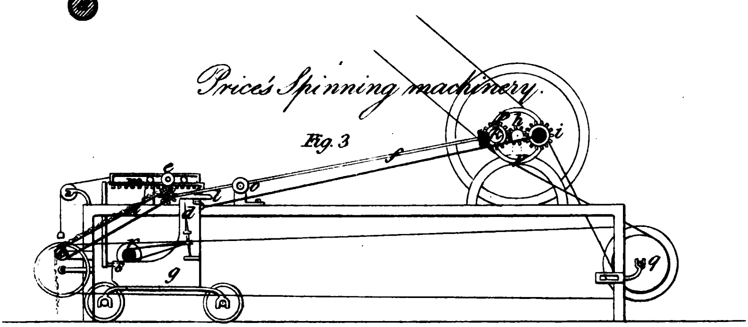
Stansfeld's mode of dressing warps.

Fig. 2.



Price's Spinning machinery.

Fig. 3



Cartmell's Gun Lock

Fig. 8.

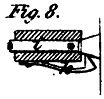


Fig. 6

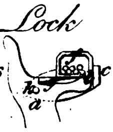


Fig. 7.

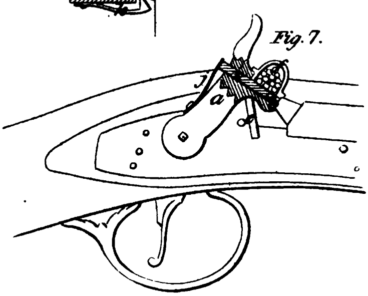
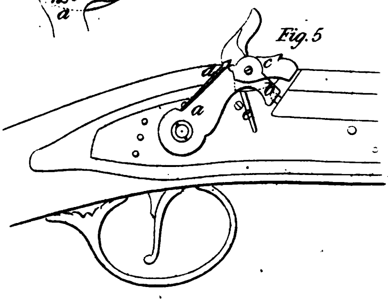


Fig. 5



W. Newton delt. 1st March 1826. S. Bellin sculpt.

Phillips's Steering Apparatus.

Fig. 1.

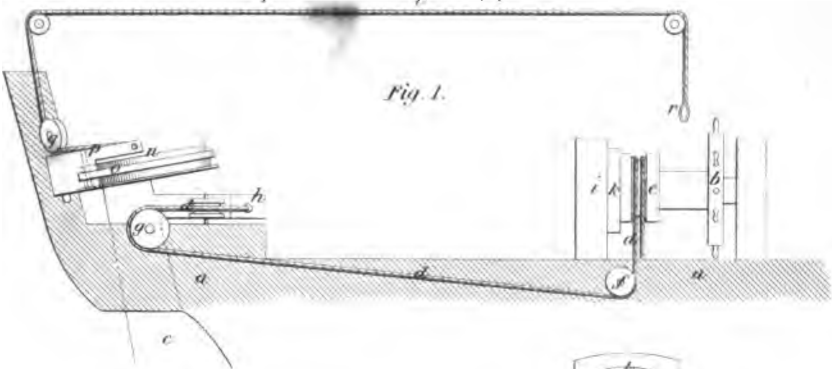


Fig. 2.

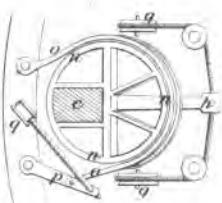
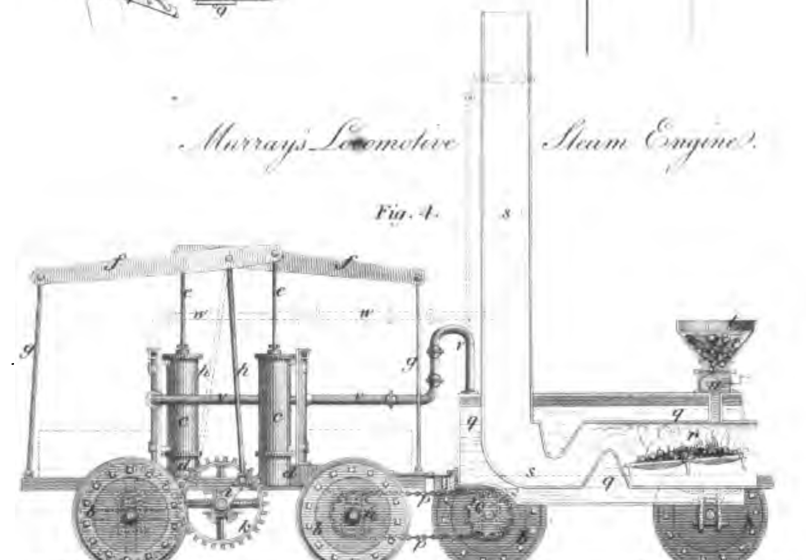
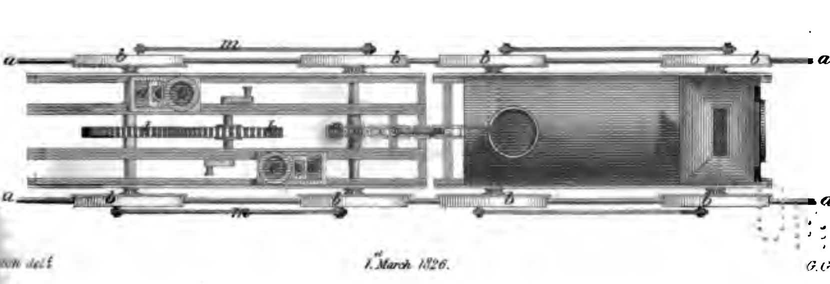


Fig. 3.

Murray's Locomotive Steam Engine.

Fig. 4.





Wilson's Loom for weaving Velvet &c.

Fig. 1.

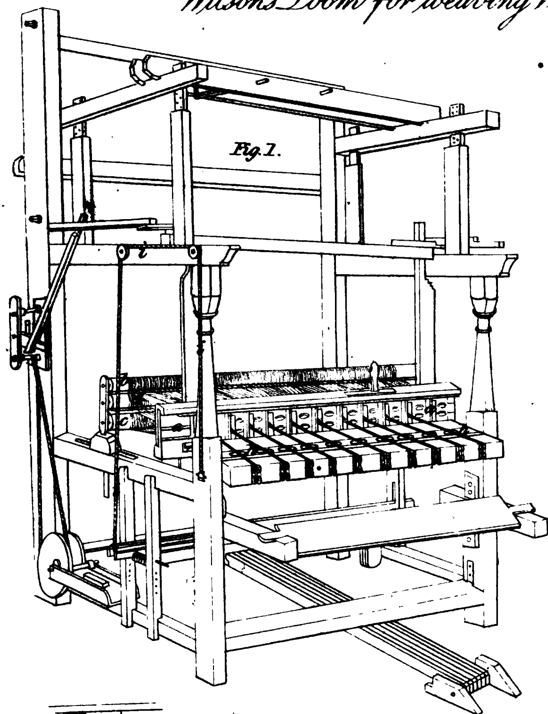


Fig. 3.

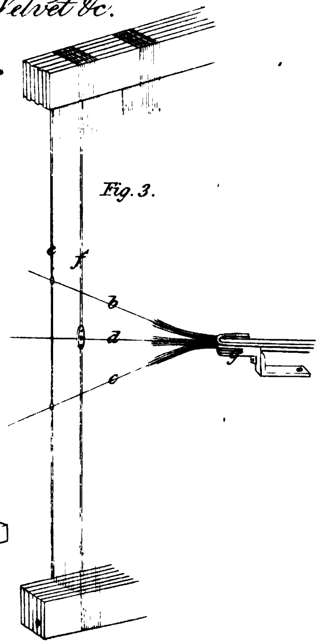


Fig. 2.

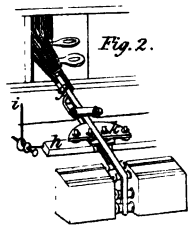
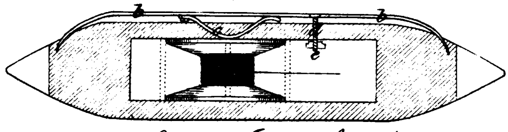


Fig. 7.



Gosset's Imp.d Shuttles.

Fig. 8.

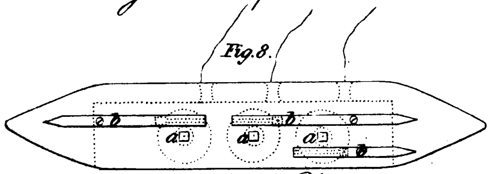
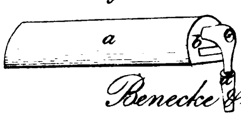


Fig. 4.



Benecke & Shears's mode of preparing Zinc.

Fig. 5.

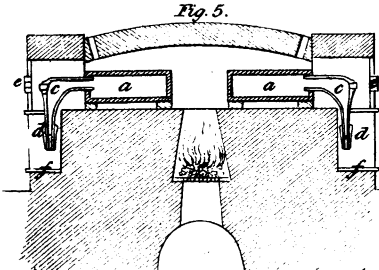
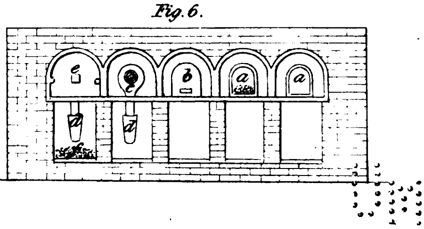
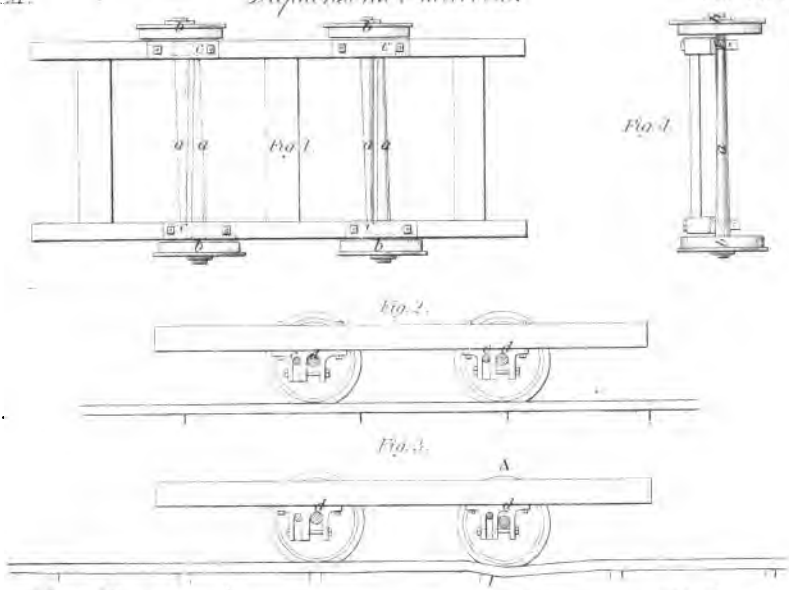


Fig. 6.

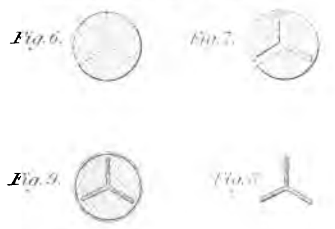


W. Newton del.t 1st March 1826. T. Owen sculp.t

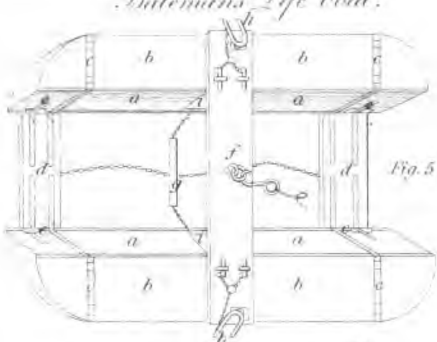
Stephenson's Axletrees.

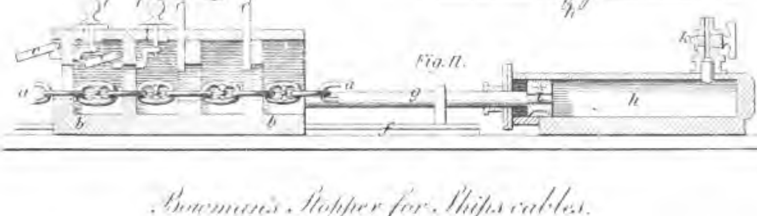


Pratt's Union rods.

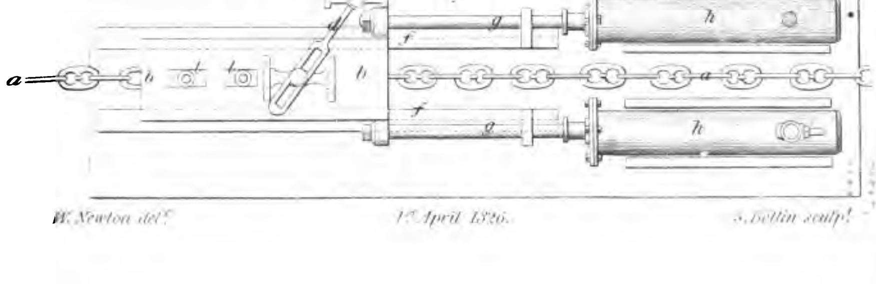


Bateman's Life boat.



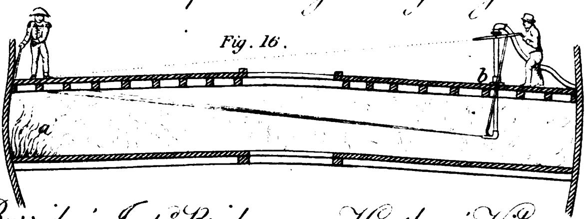


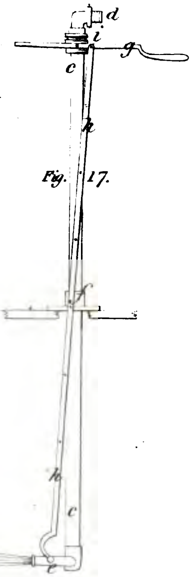
Bowman's Stopper for Ships cables.



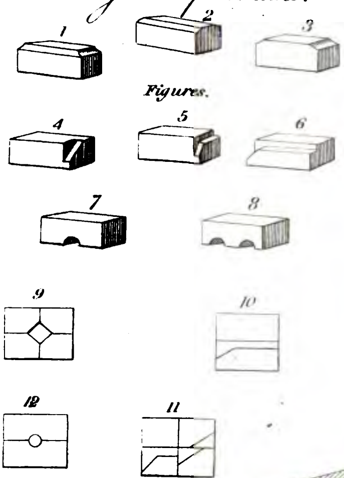
W. Newton del.^t 1.^st April 1826. S. Bellin sculp.^t

Dodd's fire extinguishing Engine.

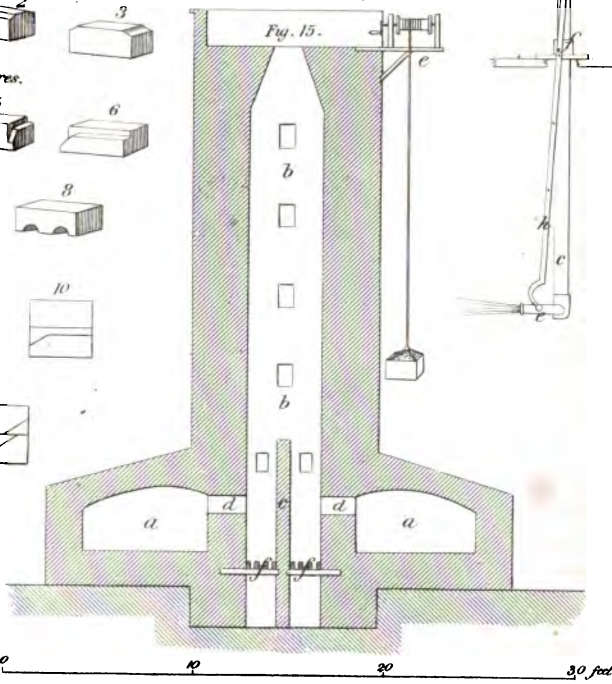


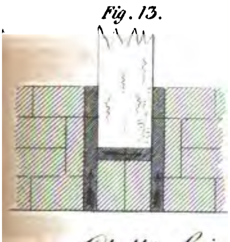


Burridge's Impd. Bricks.

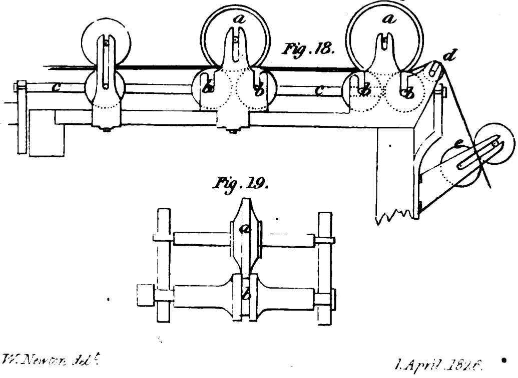


Heathorns' Kiln.

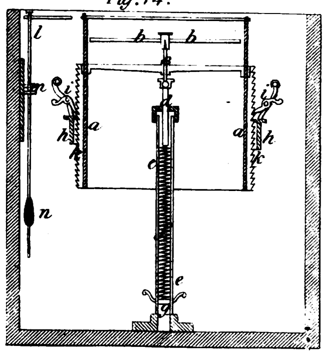




Chells' Spinning Machinery.



Phillips' Ships Compass.



Wright's Washing & Bleaching Apparatus.

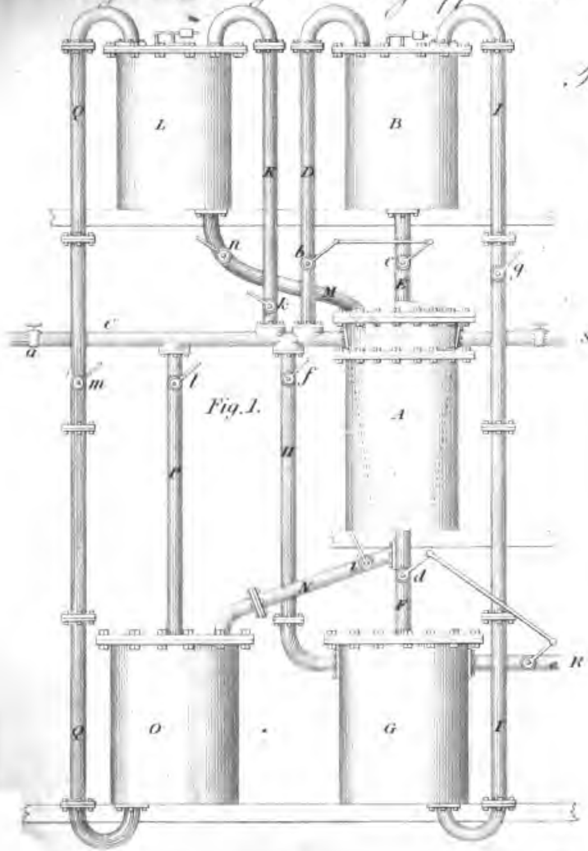


Fig. 1.

Bates's Imp^d. Spectacle.

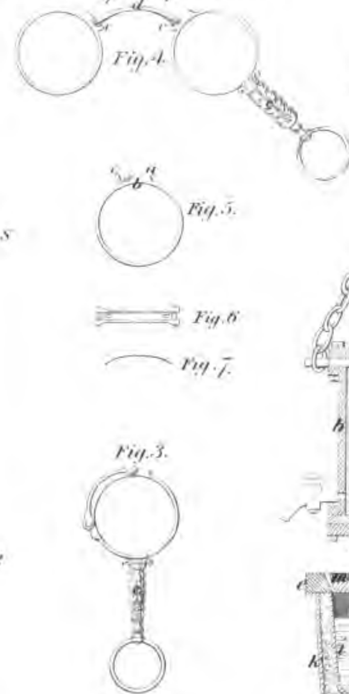


Fig. 4. Fig. 5. Fig. 6. Fig. 7. Fig. 3.

Church's Imp^d. mode of Casting Cylinders &c.

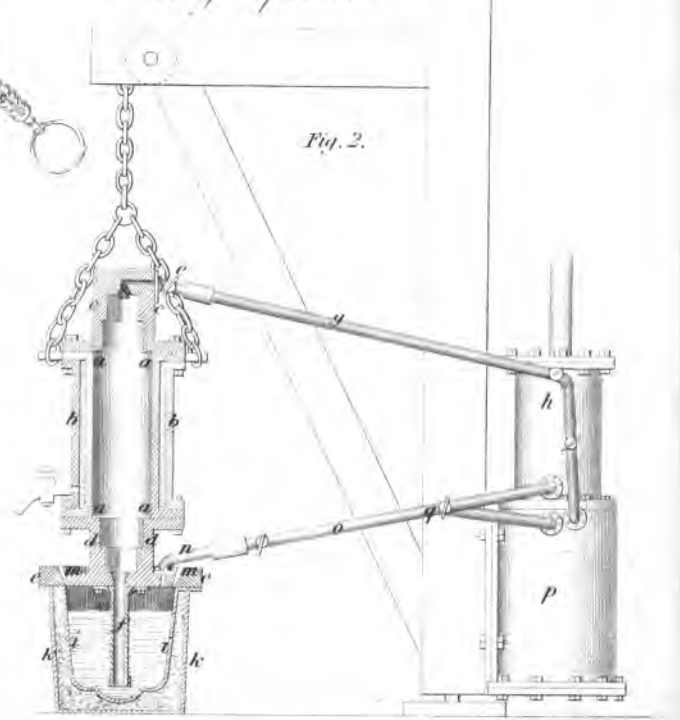
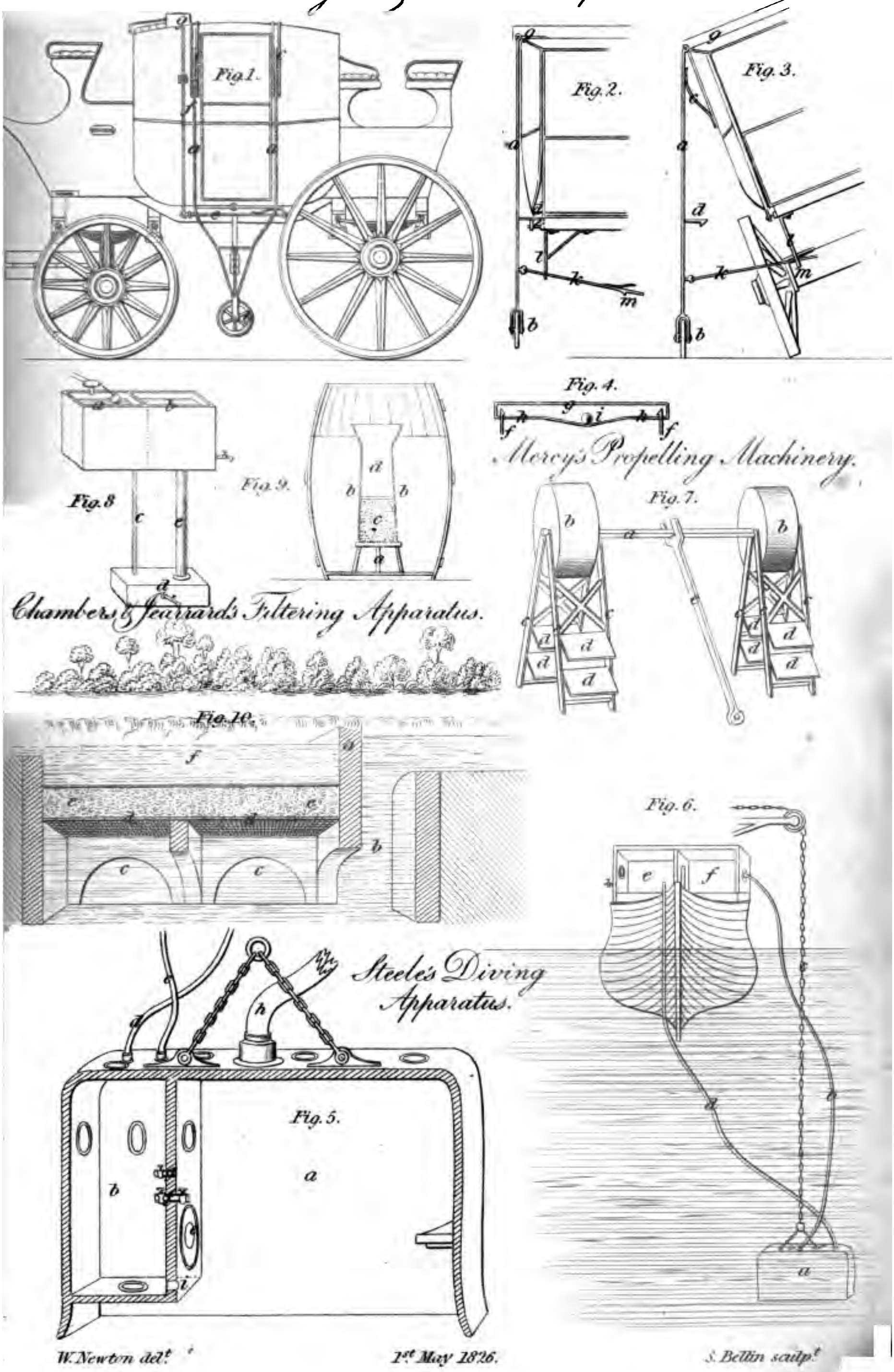


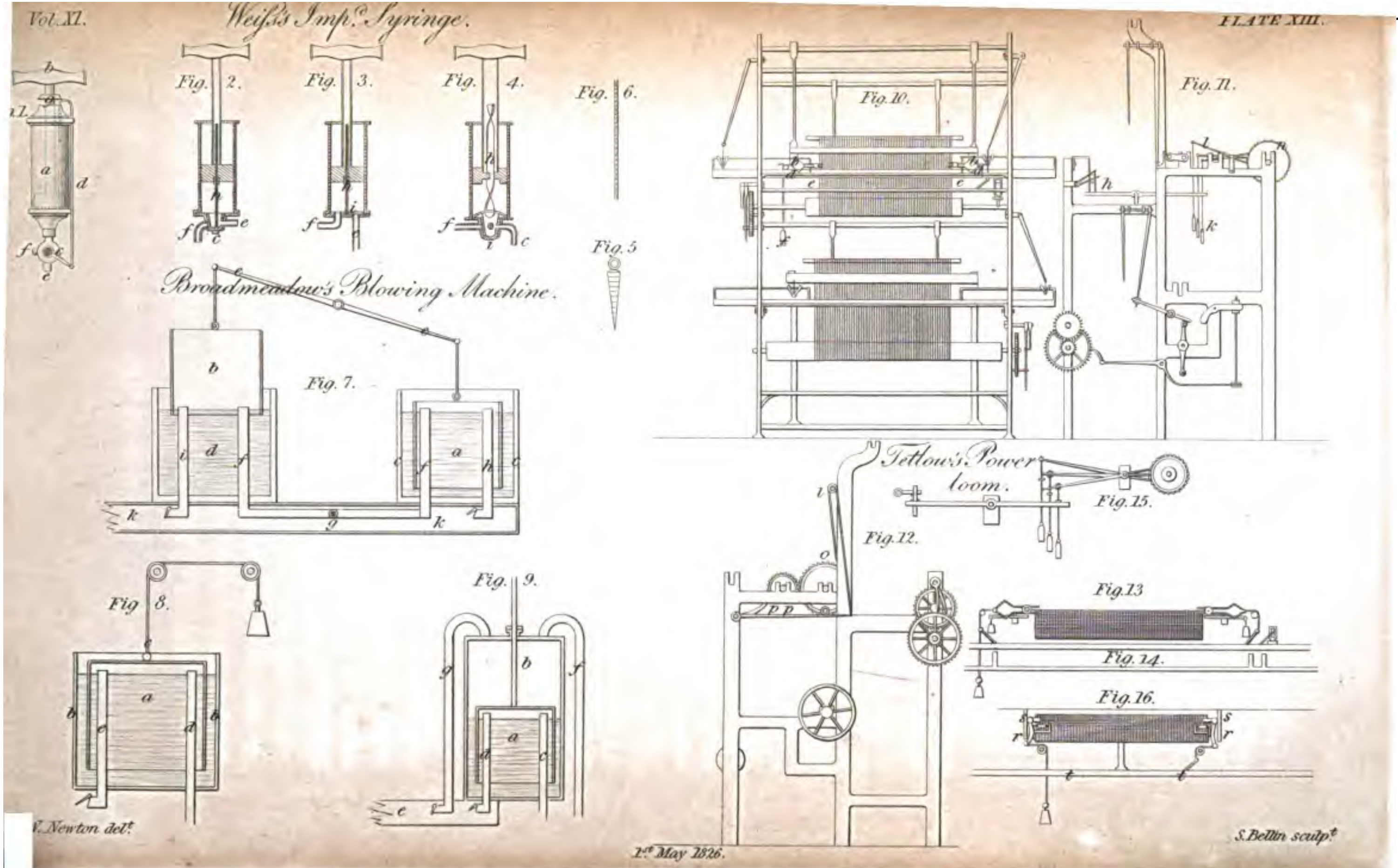
Fig. 2.

del^t. 1st May 1826. G. Gladwin sc.

Vol. XI. Hirst Heycock & Wilkinson's Safe Coach. PLATE XII.



W. Newton delt. 1st May 1826. S. Bellin sculpt.



N. Newton delt. 1st May 1826. S. Bellin sculpt.

Hirst & Co.s Gigging Machine.

Fig. 1.

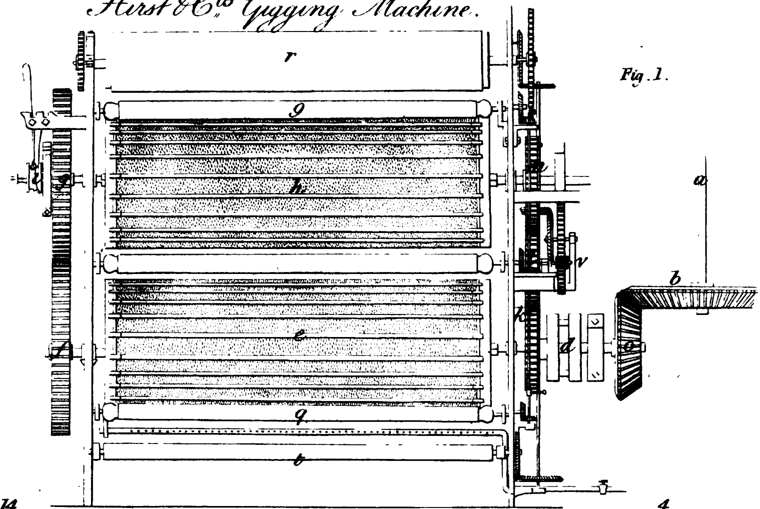


Fig. 3.

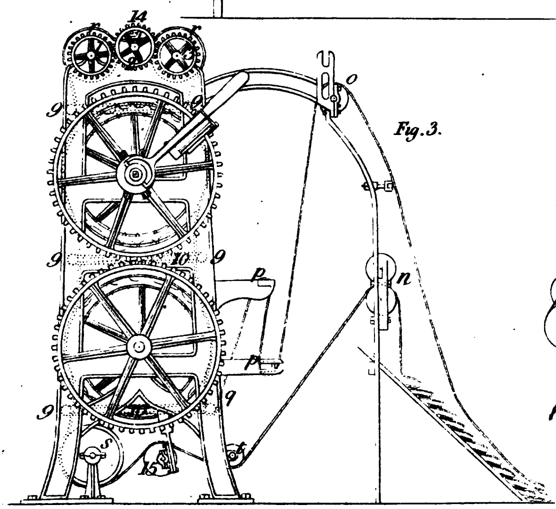
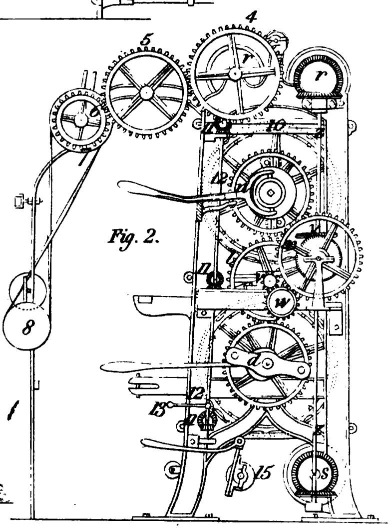


Fig. 2.



McCurdy's Apparatus for Generating Steam.

Fig. 5.

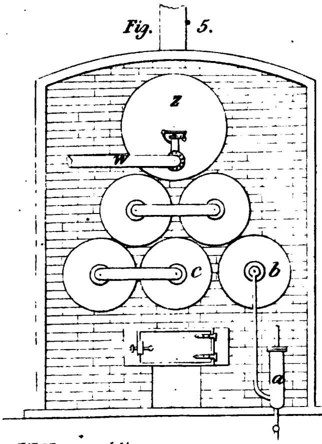


Fig. 4.

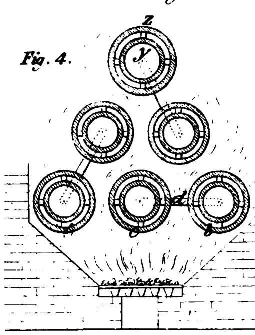
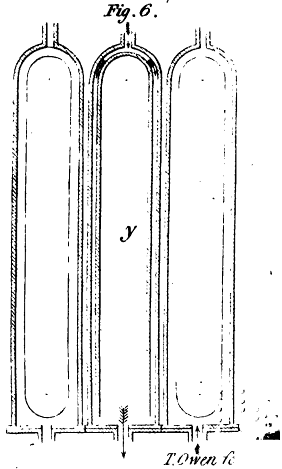
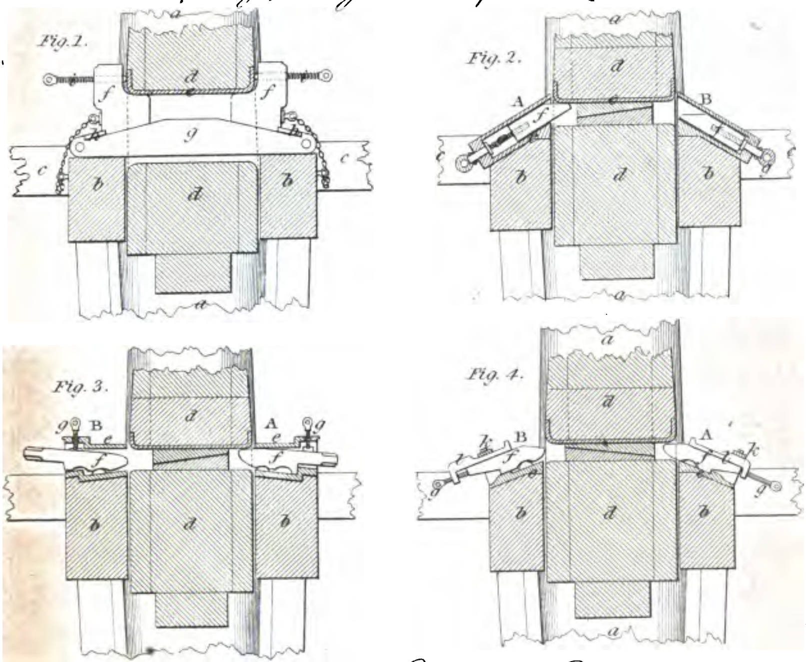


Fig. 6.

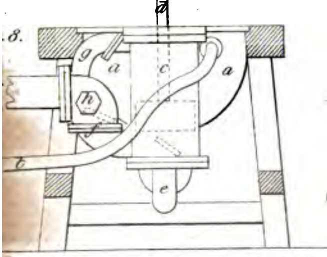


W. Newton del.t 1st June 1826. T. Owen sc.

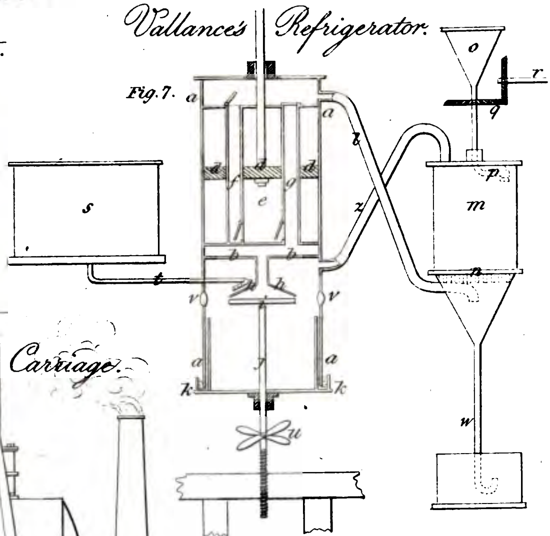
King & Kingston's Impd. Fids.



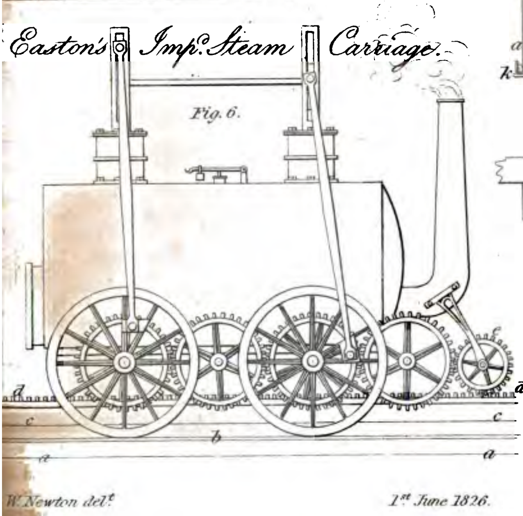
Downton's Water closet.

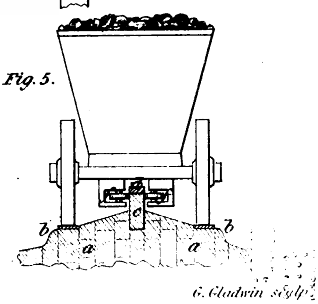


Vallance's Refrigerator.



Easton's Impd. Steam Carriage.

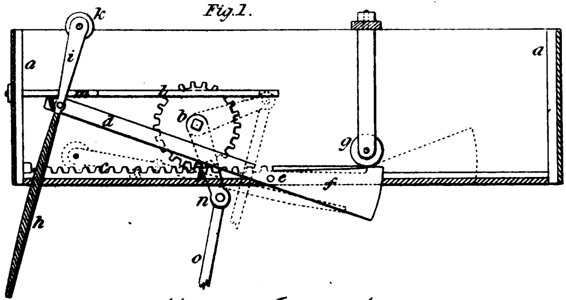




W. Newton delt. 1st June 1826. G. Gladwin sculpt.

Reedhead's Propelling Apparatus

Fig. 1.



Mason's Imp.d Axletrees.

Fig 5.

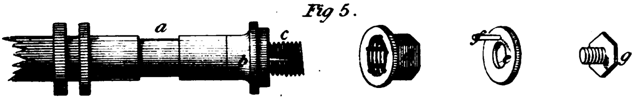
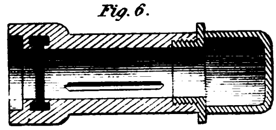


Fig. 6.



Guppy's Imp.d Masts.

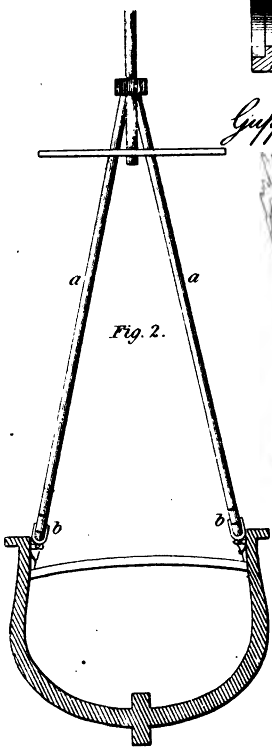


Fig. 2.

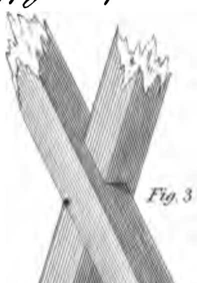


Fig. 3

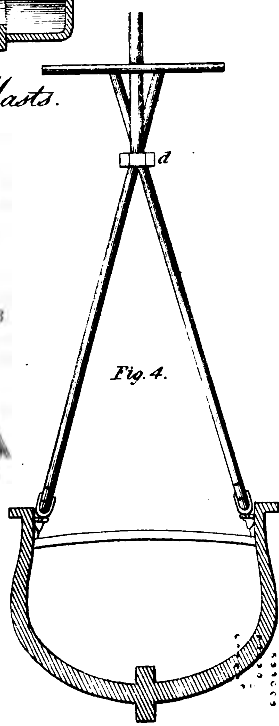
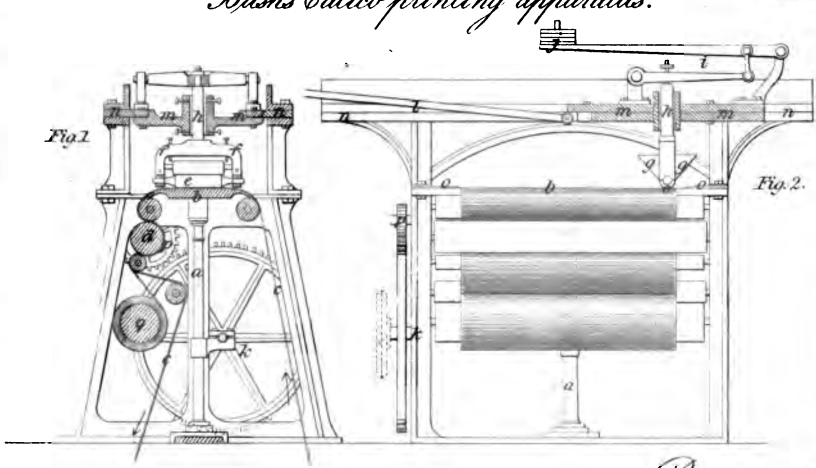
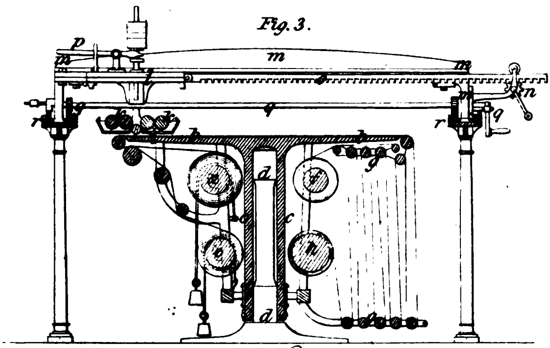


Fig. 4.

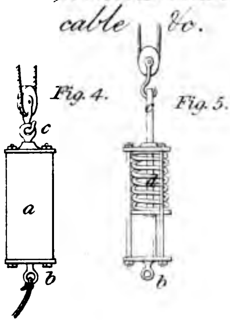
W. Newton del.t   1st June 1826.   S. Bellin sculp.t

Bush's Calico printing apparatus.

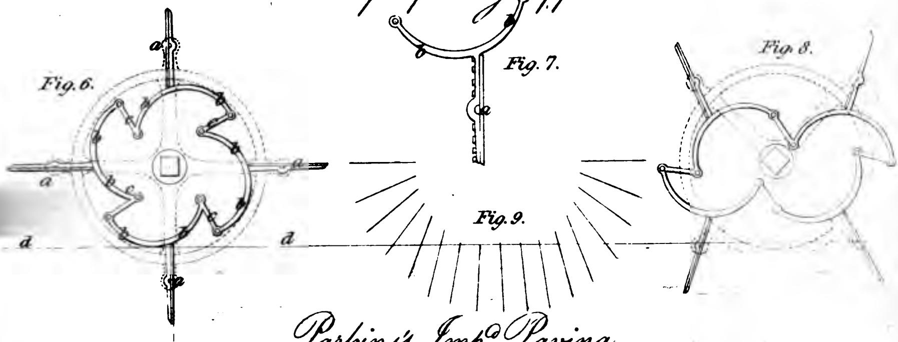




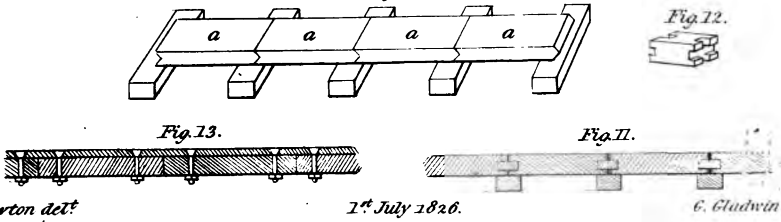
Burnett's elastic cable &c.



Hill's propelling apparatus.



Parkins's Imp^d Paving.



W. Newton del^t. 1st July 1826. G. Gladwin sc.

Borradaile's Machine for setting up Hat bodies.

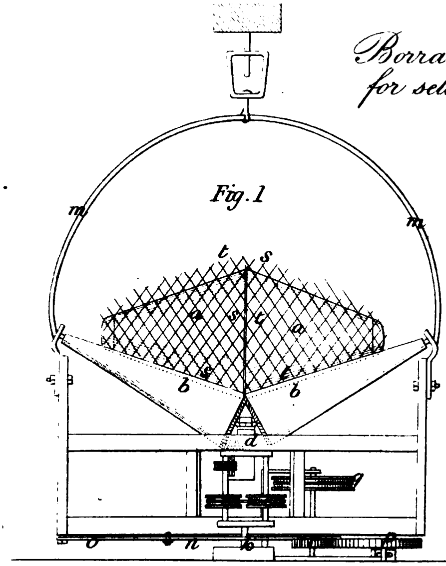


Fig. 1

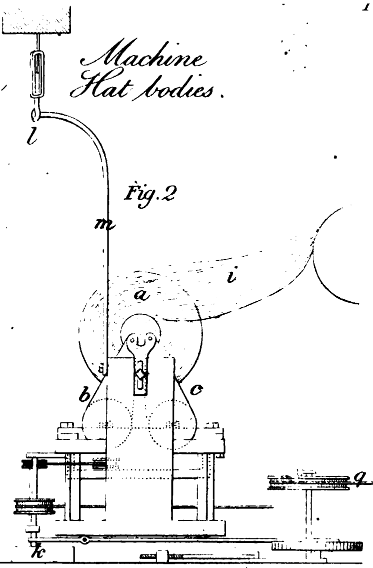


Fig. 2

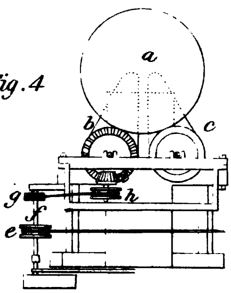


Fig. 4

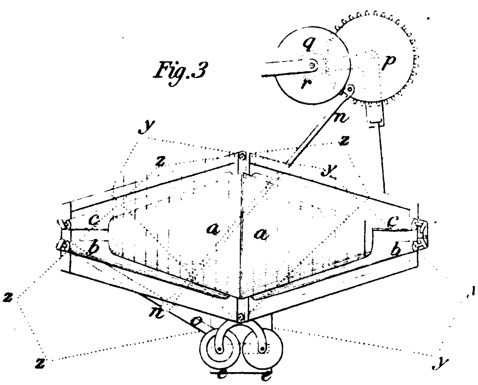


Fig. 3

Sayner & Greenwood's Sawing Machinery.

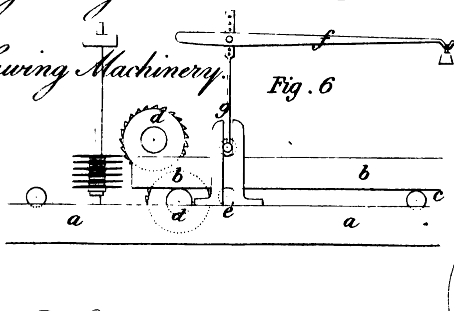


Fig. 6

Hirst's Spining Machinery.

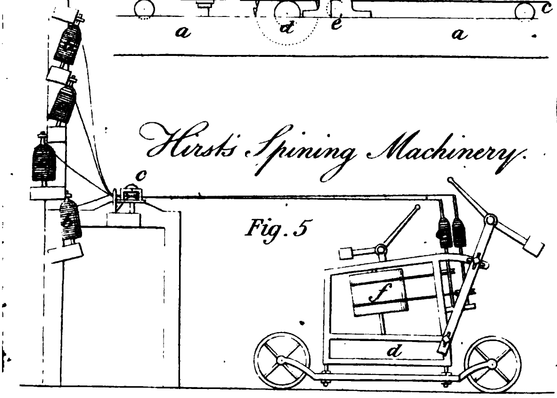


Fig. 5

Downton's Pump.

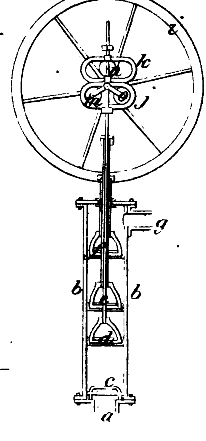


Fig. 8

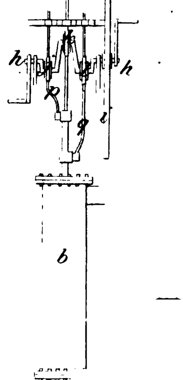


Fig. 7